INSTITUTO DE ECOLOGIA A.C. - INECOL
ANNOUNCEMENT OF RESEARCH POSITIONS

INECOL invites applications for 11 **top quality researcher** positions and 10 **highly trained academic technician** positions from Mexico and the rest of the world. Review of applications will begin immediately and will continue until September 15, 2013 or until the suitable candidates have been identified/selected. Candidates should be available to start working at INECOL on November 1st, 2013.

INECOL is an institution funded by the Mexican government that performs research and student training in the field of ecology and related disciplines (www.inecol.mx). INECOL has research facilities in the states of Veracruz and Michoacán and field stations in coastal Veracruz and in a pine forest and desert region in Durango. There are currently 105 full-time scientists, 92 technicians, 30 administrators, 123 graduate students as well as over 100 collaborators hired through external grants. Academic life is organized around 10 departments: Biodiversity and Systematics, Functional Ecology, Environment and Sustainability, Evolutionary Biology, Biorational Management of Pests and Vectors, Biotechnological Resource Management, Ecoethology, Biology and Conservation of Vertebrates, Multitrophic Interactions and the recently created department of Advanced Molecular Studies.

INECOL is currently building new research facilities (13,000 m²) within the framework of a Scientific and Technological Cluster named BioMimic (from biomimicry) formed through strategic alliances with the following research institutions: Centro de Investigación en Materiales Avanzados (CIMAV), Centro de Investigación Científica de Yucatán (CICY), Centro de Investigación en Química Aplicada (CIQA), Laboratorio Nacional de Genómica para la Biodiversidad (LANGEBIO) and Unidad Irapuato of CINVESTAV. Future partners will also include the Instituto de Ecología at the Universidad Nacional Autónoma de México (UNAM) and the Instituto Potosino de Investigación Científica y Tecnológica (IPICyT). These institutions will share facilities and equipment and will exchange scientific personnel in order to potentiate capacities, generate synergies and foster trans-disciplinary research.

As part of this new scientific and technological cluster, a new research department called "Advanced Molecular Studies" will be the focus of researchers and technicians working in one of three laboratories: Chemical Ecology, Molecular Biology and Nanotechnology (agro-nanotechnology and environmental nanotechnology). Biorational Management of Pests and Vectors offers an additional endowed research position focused on avocado pest and disease control funded by the Asociación de Productores, Empacadores y Exportadores de Aguacate de Michoacán (APEAM). **It is expected that all the new hires will actively interact with each other as well as with the rest of the scientific communities of all partners forming the BioMimic cluster**.

The new facilities also include classrooms, a teaching laboratory and an auditorium built for INECOL's graduate school, a "Center for the Recruitment of New Talents for Science and Technology" aimed at fostering interest in these fields among schoolchildren, a coffee-tasting laboratory, a small natural history museum, the Institute's biological collections (herbarium, tree-bark, fungi and insect collections), four pilot plants (edible mushrooms,

plant tissue culture, fruit fly parasitoids, parasitic fungi), a 50-year cloud forest restoration project and an “Water Education Center ”.

To foster a broad understanding of the aims of the BioMimic cluster among the new scientific staff, once formally recruited, all 20 new hires will stay at INECOL’s headquarters in Xalapa for one month getting to know the institution thoroughly. After this period, and depending on their field of expertise, they will be sent for a period of between two and six months to the allied institutions to establish productive networks and collaborations, write collaborative grants, foster long-term research projects and, importantly, **team work**. After this period they will return to INECOL’s headquarters to start working in the brand new facilities that will be equipped with state-of-the art technologies to facilitate the high quality academic and technological productivity expected from all new hires. That is, emphasis will be placed on **teams**, **team-working, collaborations, and trans-disciplinary projects**.

It is expected that chemists, molecular biologists, and nanotechnologists will actively collaborate with biologists, ecologists (including chemical ecologists), and agronomists to develop novel solutions to Mexico’s most pressing challenges. **Of particular interest, is the use of knowledge on biodiversity, one of INECOL’s historical strengths, linked to the development of designs, products, materials, and tools based on nature’s own solutions generated through evolution (i.e., bio-mimicry)**. In other words, emphasis will be placed on the added value of fundamental biological knowledge for the development of innovative materials or techniques that offer solutions to problems. For example, new adhesive/repellent/attractive materials for use in industry and medicine, nanoformulation of insecticides to enhance their performance and reduce environmental impact, compounds of pharmacological value, and mechanisms of pest and disease resistance in fruit trees. Fundamental understanding of biological, physiological, and ecological processes involving macro or micro-organisms will also be sought as the basis for applying knowledge to problem-solving endeavors. Planning and follow-up meetings will be held at least every two months among all members of **research teams** to maintain focus, to foster feedback, and to provide sustained support for cutting edge research developments. It is also expected that scientists and technicians meet on a regular basis with industry and government representatives to identify demands, common interests and suitable funding sources.

In congruence with the above, **the focus of this new research facility will be to develop cutting edge science and technological developments aimed at ultimately solving specific demands from society, governments and the productive sector** (e.g., industry, agroindustry, and rural communities involved in the management of productive natural systems). **It is expected that in addition to high quality scientific output**, in terms of high impact publications, and the training of highly competitive students and post-doctoral scientists, **hired researchers should also be involved with** the development of patentable innovations, prototypes and other **practical solutions to real-world problems and demands**. BioMimic is conceptualized as a place where innovations will be developed with specific applications to solve a myriad of environmental and agricultural problems, such as invasive and already existing pests and diseases, ecosystem effects of global climate change, resilience to global climate change, pollution and its effects on ecosystem functionality, forest and ecosystem productivity, emerging human and wildlife diseases. On top of this, and as a result of the strategic alliances with BioMimic partners, additional solutions and technological developments will be pursued in the area of advanced materials containing natural components (i.e., bio-nano approaches).

Salaries: Information on salaries will be provided upon request. Please write to Guillermo Angeles, Academy Secretary, at secretaria.academica@inecol.mx

1. RESEARCH SCIENTIST IN AGRO-NANOTECHNOLOGY

ONE POSITION IS AVAILABLE

Position Title: Researcher (Investigador Titular A or B).

Employment Status: Full-Time, 12 months. The appointment is renewable depending upon performance and funding. After three years, candidates can apply for tenure.

General Description: A highly innovative and productive scientist is required for a newly established biomimicry-inspired Scientific and Technological Cluster (Biomimic) through which research institutions share facilities and equipment and exchange scientific personnel to foster transdisciplinary research. Biomimic is being built at the headquarters of the Instituto de Ecología A.C., (INECOL) in Xalapa, Veracruz. To foster a broad understanding of the aims of the Biomimic cluster among the new scientific staff, once recruited, the candidate will spend a period of 2-6 months in either CIMAV (Centro de Investigación en Materiales Avanzados), CIQA (Centro de Investigación en Química Aplicada) or CICY (Centro de Investigación Científica de Yucatán) to establish productive collaborations, write collaborative grants, and to foster long-term collaborative research projects. The candidate will then return to the brand new facilities at INECOL's headquarters equipped with state-of-the art technologies to facilitate high quality academic and technological research.

The recruited agro-nanotechnologist and environmental nanotechnologist will actively collaborate with agronomists, biologists, ecologists, molecular biologists, chemists, biochemists, and microbiologists to produce novel solutions to Mexico's most pressing environmental problems/challenges. Emphasis will be placed on the development of innovative materials or techniques that offer solutions to specific problems, such as nanoformulation of insecticides to enhance their performance and reduce environmental impact, adhesive/repellent/attractive materials for use in agro-industry, and the development of materials of potential pharmacological value. Additional solutions and technological developments will be pursued in the area of advanced materials containing natural components (i.e., bio-nano approaches), as well as in environmental sciences, medicine, food science, renewable energies, agriculture and industrial uses such as the development of novel formulations for environmentally-friendly paints, polymers, etc. The recruited scientist will meet on a regular basis with industry and government representatives to identify demands, common interests and suitable funding sources.

Responsibilities:

- The successful candidate will perform the highest quality research at the cutting edge of knowledge on nanostructures/nanomaterials that can be employed to solve pressing agricultural and environmental issues of national importance in Mexico.

- The candidate will collaborate extensively with other researchers of the Biomimic cluster, both in providing nanotechnology-related services to the Biomimic community and by participation in collaborative studies.
- Develop highly original innovative nanotechnological solutions to specific problems that can strengthen links to the industrial sector by offering expert technical services and by developing intellectual property.
- Examine the environmental impact and biosecurity issues related to the use of nanomaterials in natural ecosystems and agroecosystems.
- Maintain the laboratory equipment in optimal working condition and compete for national and international funding to update and extend the range of equipment as necessary.
- Teaching in INECOL Master's and Doctorate programs.
- Supervising graduate and undergraduate students.
- Write competitive grants to fund research activities submitted to Mexican and international organizations/government agencies, and also to commercial companies.
- Publish high quality papers in internationally recognized scientific journals, and occasionally in books, national and outreach journals and popular magazines intended for the general public.
- Write or help write patents.
- Help recruit talents for science and technology among primary, secondary and high school students.

Qualifications:

- Bachelor's degree in chemistry or materials science with a doctoral degree in nanotechnology in an agriculture-related field.
- At least one postdoctoral position in area of expertise.
- Special attention will be granted to those candidates having obtained outstanding research achievements during their doctoral studies.
- Expertise in the field of nanostructures/nanomaterials applied to the formulation of biologically-active compounds, such as pesticides, pharmaceuticals, cosmetics, etc., and/or the development of biologically-inspired novel nanomaterials.
- Expertise in chemical techniques related to the preparation and handing of nanomaterials.
- Experience living and working in Latin America is desirable but not essential.
- Fluency or a willingness to learn Spanish, both spoken and written, is required; as are written and spoken skills in English.
- Excellent interpersonal and multitasking skills, ability to negotiate, to deal with pressure, complex situations and stress.
- Proven grant-writing skills.
- Ability to work with the private sector as well as government agencies.
- Skills in constructing and working in multidisciplinary teams, especially in providing technical services related to the production and handling of nanomaterials as part of multidisciplinary projects.
- Work outside of regular business hours including weekends and travel is occasionally required.
- Commitment to ethics/scientific integrity.
- A spirit of collaboration/team working and service to society.

- A driving license.
- Authorship of at least 5 recent scientific publications (at least three as first author or corresponding author), in high quality international indexed journals.

Interested candidates from Mexico **and elsewhere in the entire world** should send their updated *Curriculum Vitae* and additional support material of particular value for members of the Search Committee (e.g., citation record, relevant awards, narrative of particular achievements or contributions to science) to Dr. Guillermo Angeles, Secretario Académico at secretaria.academica@inecol.edu.mx always cc'ing maluja.dirgral@inecol.edu.mx. Three letters of recommendation are needed as well as the e-mail addresses and telephones of three established scientists/professors that have agreed to be interviewed on the candidate's strengths and weaknesses. An additional letter by the candidate expressing interest in the job, explaining how exactly her/his training/experience fits the job description, and expressing her/his willingness to strictly adhere to the principles of collaboration, team working, networking and scientific integrity is also needed. Any questions should be addressed to Dr. Guillermo Angeles.

2. RESEARCH SCIENTIST IN ORGANIC CHEMISTRY

ONE POSITION IS AVAILABLE

Position Title: Researcher (Investigador Titular A).

Employment Status: Full-Time, 12 months. The appointment is renewable depending upon performance and funding. After three years, candidates can apply for tenure.

General Description: A highly innovative and productive scientist is required for a newly established biomimicry-inspired Scientific and Technological Cluster (Biomimic) through which research institutions share facilities and equipment and exchange scientific personnel to foster transdisciplinary research. Biomimic is being built at the headquarters of the Instituto de Ecología A.C., (INECOL) in Xalapa, Veracruz. To foster a broad understanding of the aims of the Biomimic cluster among the new scientific staff, once recruited, the candidate will spend a period of 2-6 months in either CIMAV (Centro de Investigación en Materiales Avanzados) or CIQA (Centro de Investigación en Química Aplicada) to establish productive collaborations, write collaborative grants, and to foster long-term collaborative research projects. The candidate will then return to the brand new facilities at INECOL's headquarters equipped with state-of-the art technologies to facilitate high quality academic and technological research.

The successful candidate will develop a highly original line of research on the isolation and identification of organic molecules from natural sources derived from Mexico's enormous natural biodiversity. The identification and characterization of these compounds should find potential applications in medicine, food science, cosmetics, renewable energies, agriculture and industrial uses such as the development of novel formulations for environmentally-friendly paints, polymers, etc. These lines of research will involve extensive collaboration/team working with other members of the Biomimic cluster in trans-disciplinary projects focused on aspects of Mexico's most pressing environmental, social and development issues.

Responsibilities:

- Carry out research at the cutting edge of knowledge.
- The candidate will be capable of isolation, identification and characterization of organic molecules with industrial and/or medical applications.
- Identify and propose novel uses for organic molecules derived from or inspired by compounds isolated from plants and microorganisms, in collaboration with an environmental microbiologist. The identified compounds of interest should offer novel solutions to recognized problems affecting human and animal health, food science, or contribute to solving major environmental or development issues in Mexico.
- Synthesize novel molecules from naturally-derived precursors to enhance specific physical or bioactive attributes.
- The candidate will collaborate extensively with other researchers of the Biomimic cluster, both in providing organic chemistry related services to the Biomimic community and by participation in collaborative studies.
- Maintain the laboratory equipment in optimal working condition and compete for national and international funding to update and extend the range of equipment as necessary.

- Teaching in INECOL Master's and Doctorate programs.
- Supervising graduate and undergraduate students.
- Write competitive grants to fund research activities submitted to Mexican and international organizations/government agencies, and also to commercial companies.
- Publish high quality papers in internationally recognized scientific journals, and occasionally in books, national and outreach journals and popular magazines intended for the general public.
- Write or help write patents.
- Help recruit talents for science and technology among primary, secondary and high school students.

Qualifications:

- Doctoral degree in organic chemistry.
- At least one postdoctoral position in area of expertise.
- Special attention will be granted to those candidates having obtained outstanding research achievements during their doctoral studies.
- Ample experience in the isolation and identification of organic molecules of natural origin, especially plants and/or microorganisms.
- Evidence of abilities in organic synthesis and elucidating reaction mechanisms.
- Experience in the use and interpretation of analytical tools such as GC, GC-MS, HPLC-MS, FT-IR, NMR, RAMAN and X-ray diffraction.
- Distillation techniques under varying conditions.
- Experience living and working in Latin America is desirable but not essential.
- Fluency or a willingness to learn Spanish, both spoken and written, is required; as are written and spoken skills in English.
- Excellent interpersonal and multitasking skills, ability to negotiate, to deal with pressure, complex situations and stress.
- Work outside of regular business hours including weekends and travel is occasionally required.
- Commitment to ethics/scientific integrity.
- Proven grant-writing skills.
- Skills in constructing and working in multidisciplinary teams as part of multidisciplinary projects.
- A spirit of collaboration/team working and service to society.
- A driving license.
- Authorship of at least 5 recent scientific publications (at least three as first author or corresponding author), in high quality international indexed journals.

Interested candidates from Mexico **and elsewhere in the entire world** should send their updated *Curriculum Vitae* and additional support material of particular value for members of the Search Committee (e.g., citation record, relevant awards, narrative of particular achievements or contributions to science) to Dr. Guillermo Angeles, Secretario Académico at secretaria.academica@inecol.edu.mx always cc'ing maluja.dirgral@inecol.edu.mx. Three letters of recommendation are needed as well as the e-mail addresses and telephones of three established scientists/professors that have agreed to be interviewed on the candidate's strengths and weaknesses. An additional letter by the candidate expressing interest in the job, explaining how exactly her/his training/experience fits the job

description, and expressing her/his willingness to strictly adhere to the principles of collaboration, team working, networking and scientific integrity is also needed. Any questions should be addressed to Dr. Guillermo Angeles.

3. RESEARCH SCIENTIST IN COMPUTATIONAL NANOCHEMISTRY

ONE POSITION IS AVAILABLE

Position Title: Researcher (Investigador Titular A).

Employment Status: Full-Time, 12 months. The appointment is renewable depending upon performance and funding. After three years, candidates can apply for tenure.

General Description: A productive and innovative computational chemist is required for a newly established biomimicry-inspired Scientific and Technological Cluster (Biomimic) through which institutions share facilities and equipment and exchange scientific personnel to foster transdisciplinary research. The successful candidate will be responsible for the design, simulation and analysis of biomolecules, such as antibiotics, proteins, enzymes, nucleic acids, nanoparticles and nanomaterials. This will be achieved through computational studies and molecular modeling of natural and naturally-derived products, particularly related to nanostructures and/or potential applications in agriculture, in the solution of environmental issues, in the production of materials with potential pharmacological value as well as useful in medicine, food science, cosmetics, renewable energies, agriculture and industrial uses such as the development of novel formulations for environmentally-friendly paints, polymers, etc.

To foster a broad understanding of the aims of the Biomimic cluster among the new scientific staff, once recruited, the candidate will spend a period of 2-6 months in CIMAV (Centro de Investigación en Materiales Avanzados) or CIQA (Centro de Investigación en Química Aplicada) to establish productive collaborations, write collaborative grants, and to foster long-term research projects. The candidate will then return to the brand new facilities equipped with state-of-the art technologies to perform high quality academic and technological studies. The recruited computational chemist will actively collaborate with agronomists, biologists, ecologists, molecular biologists, chemists, biochemists, and microbiologists to produce novel solutions to Mexico's most pressing problems/challenges. The recruited scientists will also meet on a regular basis with industry and government representatives to identify demands, common interests and suitable funding sources.

Responsibilities:

- The successful candidate will perform the highest quality research at the cutting edge of knowledge on nanostructures/nanomaterials that can be employed to solve pressing agricultural, energy, disease and environmental issues of national importance in Mexico.
- The candidate will collaborate extensively with other researchers of the Biomimic cluster, both in providing computational chemistry related services to the Biomimic community and by participation in collaborative studies.
- Develop highly original innovative solutions to specific problems through new methodologies and software that can strengthen links to the industrial sector by offering expert technical services and by developing intellectual property.
- Employ molecular models to examine potential environmental impact and biosecurity issues related to the use of nanomaterials in the environment.
- Teaching in INECOL Master's and Doctorate programs.
- Supervising graduate and undergraduate students.

- Write competitive grants to fund research activities submitted to Mexican and international organizations/government agencies, and also to commercial companies.
- Publish high quality papers in internationally recognized scientific journals, and occasionally in books, national and outreach journals and popular magazines intended for the general public.
- Write or help write patents.
- Help recruit talents for science and technology among primary, secondary and high school students.

Qualifications:

- Bachelor's degree in chemistry or materials science with a doctoral degree in computational chemistry.
- At least one postdoctoral position in area of expertise.
- Special attention will be granted to those candidates having obtained outstanding research achievements during their doctoral studies.
- Expertise with computational software for the design, simulation and analysis of single molecules or chemical reactions, with emphasis on biomolecules and nanoparticles/nanomaterials.
- Expertise with specialized hardware for computational chemistry and molecular modeling.
- Expertise in the analysis and interpretation of spectroscopic results, including IR, UV-Vis, NMR, Raman, etc.
- Expertise in computational chemistry and molecular modeling of natural and naturally-derived products related to nanostructures and/or those with potential applications in agriculture, environmental issues and/or compounds of pharmacological value.
- Experience living and working in Latin America is desirable but not essential.
- Fluency or a willingness to learn Spanish, both spoken and written, is required; as are written and spoken skills in English.
- Excellent interpersonal and multitasking skills, ability to negotiate, to deal with pressure, complex situations and stress.
- Work outside of regular business hours including weekends and travel is occasionally required.
- Commitment to ethics/scientific integrity.
- Proven grant-writing skills.
- Ability to work with the private sector as well as government agencies.
- Skills in constructing and working in multidisciplinary teams as part of multidisciplinary projects.
- A spirit of collaboration/team working and service to society.
- A driving license.
- Authorship of at least 5 recent scientific publications (at least three as first author or corresponding author), in high quality international indexed journals.

Interested candidates from Mexico **and elsewhere in the entire world** should send their updated *Curriculum Vitae* and additional support material of particular value for members of the Search Committee (e.g., citation record, relevant awards, narrative of particular achievements or contributions to science) to Dr. Guillermo Angeles, Secretario Académico at secretaria.academica@inecol.edu.mx always cc'ing maluja.dirgral@inecol.edu.mx.

Three letters of recommendation are needed as well as the e-mail addresses and telephones of three established scientists/professors that have agreed to be interviewed on the candidate's strengths and weaknesses. An additional letter by the candidate expressing interest in the job, explaining how exactly her/his training/experience fits the job description, and expressing her/his willingness to strictly adhere to the principles of collaboration, team working, networking and scientific integrity is also needed. Any questions should be addressed to Dr. Guillermo Angeles.

4. RESEARCH SCIENTIST: MOLECULAR BIOLOGY OF PLANT RESISTANCE TO PATHOGENS OR INSECTS PESTS

ONE POSITION IS AVAILABLE

Position Title: Researcher (Investigador Titular A).

Employment Status: Full-Time, 12 months. The appointment is renewable depending upon performance and funding. After three years, candidates can apply for tenure.

General Description: The selected candidate is expected to lead research on the development of pest and disease resistant strains of crops including fruit trees and timber of major importance for Mexico. The main aim of the research is to identify and employ pest and disease resistance mechanisms present in the native flora that can be harnessed for use in crop plants, particularly crops suffering from emerging disease problems or diseases with major adverse effects on crop productivity. The successful candidate will join Biomimic, a multidisciplinary team and will directly interact with other scientists specialized in genomics, functional genomics, natural or induced mechanisms of genetic recombination, chemists and technicians trained in molecular biology and bioinformatics. Biomimic provides access to state of the art high-throughput DNA sequencing equipment and bioinformatics facilities. Solid experience in molecular biology is required, as well as strong grant-writing, computer, and oral/writing skills. Experience in plant-microbe and/or plant-insect interactions at the molecular level is essential. Experience working with fruit trees is not necessary but the selected candidate is expected to quickly gain experience in the area.

To foster a broad understanding of the aims of the Biomimic cluster among the new scientific staff, once recruited, the candidate will spend a period of 2-6 months in either the Laboratorio Nacional de Genómica para la Biodiversidad (LANGEBIO), Unidad Irapuato of CINVESTAV, or Centro de Investigación Científica de Yucatán (CICY) to establish productive collaborations, write collaborative grants, and to foster long-term collaborative research projects. The candidate will then return to the brand new facilities at INECOL's headquarters equipped with state-of-the art technologies to facilitate high quality academic and technological research.

Responsibilities:

- Carry out research at the cutting edge of knowledge.
- Establish a line of research on mechanisms of plant resistance to disease/pests and collaborate with colleagues working on plant genomics and functional genomics to identify and harness natural plant resistance mechanisms for the development of resistant cultivars.
- Generate novel solutions to plant pest and disease issues affecting major field and fruit crops in Mexico.
- The candidate will collaborate extensively with other researchers of the Biomimic cluster, both in providing molecular phytopathology related services to the Biomimic community and by participation in collaborative studies.
- Teaching in INECOL Master's and Doctorate programs.
- Supervising graduate and undergraduate students.

- Write competitive grants to fund research activities submitted to Mexican and international organizations/government agencies, and also to commercial companies.
- Publish high quality papers in internationally recognized scientific journals, and occasionally in books, national and outreach journals and popular magazines intended for the general public.
- Write or help write patents.
- Help recruit talents for science and technology among primary, secondary and high school students.

Qualifications:

- Bachelor's degree in chemistry, biochemistry, biotechnology or a closely related discipline with a doctoral degree in biotechnology/molecular biology.
- At least one postdoctoral position in area of expertise.
- Expertise with molecular characterization of plant resistance mechanisms elicited in response to pathogen or pest attack.
- Special attention will be granted to those candidates having obtained outstanding research achievements during their doctoral studies.
- Experience living and working in Latin America is desirable but not essential.
- Fluency or a willingness to learn Spanish, both spoken and written, is required; as are written and spoken skills in English.
- Excellent interpersonal and multitasking skills, ability to negotiate, to deal with pressure, complex situations and stress.
- Work outside of regular business hours including weekends and travel is occasionally required.
- Commitment to ethics/scientific integrity.
- Proven grant-writing skills.
- Ability to work with the private sector as well as government agencies.
- Skills in constructing and working in multidisciplinary teams as part of multidisciplinary projects.
- A spirit of collaboration/team working and service to society.
- A driving license.
- Authorship of at least 5 recent scientific publications (at least three as first author or corresponding author), in high quality international indexed journals.

Interested candidates from Mexico **and elsewhere in the entire world** should send their updated *Curriculum Vitae* and additional support material of particular value for members of the Search Committee (e.g., citation record, relevant awards, narrative of particular achievements or contributions to science) to Dr. Guillermo Angeles, Secretario Académico at secretaria.academica@inecol.edu.mx always cc'ing maluja.dirgral@inecol.edu.mx. Three letters of recommendation are needed as well as the e-mail addresses and telephones of three established scientists/professors that have agreed to be interviewed on the candidate's strengths and weaknesses. An additional letter by the candidate expressing interest in the job, explaining how exactly her/his training/experience fits the job description, and expressing her/his willingness to strictly adhere to the principles of collaboration, team working, networking and scientific integrity is also needed. Any questions should be addressed to Dr. Guillermo Angeles.

5. RESEARCH SCIENTIST IN ENVIRONMENTAL (SOIL & WATER) MICROBIOLOGY

ONE POSITION IS AVAILABLE

Position Title: Researcher (Investigador Titular A).

Employment Status: Full-Time, 12 months. The appointment is renewable depending upon performance and funding. After three years, candidates can apply for tenure.

General Description: The selected candidate is expected to develop a highly original research program with emphasis on the isolation and identification of soil microorganisms that affect soil fertility, including host-parasite, host-pathogen or plant-microbe systems, and specifically investigate potential beneficial or adverse impacts of novel nanomaterials and nanocompounds on the dynamics, structure and function of microbial communities in aquatic, soil, rhizosphere, and phylloplane ecosystems. The successful candidate will join Biomimic and will directly interact with other scientists specialized in genomics, functional genomics, natural or induced mechanisms of genetic recombination, and technicians trained in molecular biology and bioinformatics.

To foster a broad understanding of the aims of the Biomimic cluster among the new scientific staff, once recruited, the candidate will spend a period of 2-6 months in either the Laboratorio Nacional de Genómica para la Biodiversidad (LANGEBIO), Unidad Irapuato of CINVESTAV, CIMAV (Centro de Investigación en Materiales Avanzados), or Centro de Investigación Científica de Yucatán (CICY) to establish productive collaborations, write collaborative grants, and to foster long-term collaborative research projects. The candidate will then return to the brand new facilities at INECOL's headquarters equipped with state-of-the art technologies to facilitate high quality academic and technological research.

Responsibilities:

- Carry out research at the cutting edge of knowledge.
- The candidate will collaborate extensively with other researchers of the Biomimic cluster, both in providing microbiology-related services to the Biomimic community and by participation in collaborative studies.
- The researcher will be expected to examine the effects and interactions of nanomaterials/nanocompounds on soil fertility and soil and water microbial communities.
- Develop highly original innovative solutions to specific issues related to soil fertility and/or the environmental impact of nanotechnology that can strengthen links to the industrial sector by offering expert technical services and by developing intellectual property.
- Propose novel models and molecular mechanisms involved in the interaction of nanomaterials and soil microbiota in managed and natural ecosystems that have clear applications to promoting soil fertility or reducing the incidence of soil-dwelling plant pathogens.
- Teaching in INECOL Master's and Doctorate programs.
- Supervision of graduate and undergraduate students.

- Write competitive grants to fund research activities submitted to Mexican and international organizations/government agencies, and also to commercial companies.
- Publish high quality papers in internationally recognized scientific journals, and occasionally in books, national and outreach journals and popular magazines intended for the general public.
- Write or help write patents.
- Help recruit talents for science and technology among primary, secondary and high school students.

Qualifications:

- Doctoral degree in Microbiology or a closely related discipline from a world-renowned institution.
- At least one postdoctoral position in area of expertise.
- Special attention will be granted to those candidates having obtained outstanding research achievements during their doctoral studies.
- Experience in the cultivation and identification of microorganisms from natural and managed ecosystems, particularly the soil and water and their interaction with nanoparticles derived from pesticides, agrochemicals, or industrial processes.
- Experience in the application and interpretation of molecular and genomic techniques and of cultivation-independent techniques applied to the characterization of microbial communities (TRFLP, DGGe, ARDRA, etc.) as well as natural or induced mechanisms of genetic recombination.
- Teaching experience at the undergraduate and graduate levels desirable.
- Experience living and working in Latin America is desirable but not essential.
- Fluency or a willingness to learn Spanish, both spoken and written, is required; as are written and spoken skills in English.
- Excellent interpersonal and multitasking skills, ability to negotiate, to deal with pressure, complex situations and stress.
- Work outside of regular business hours including weekends and travel is occasionally required.
- Commitment to ethics/scientific integrity.
- Skills in constructing and working in multidisciplinary teams as part of multidisciplinary projects.
- Willingness to work outside of regular business hours and travel is occasionally required.
- A spirit of collaboration/team working and service to society.
- A driving license.
- Authorship of at least 5 recent scientific publications (at least three as first author or corresponding author), in high quality international indexed journals.

Interested candidates from Mexico **and elsewhere in the entire world** should send their updated *Curriculum Vitae* and additional support material of particular value for members of the Search Committee (e.g., citation record, relevant awards, narrative of particular achievements or contributions to science) to Dr. Guillermo Angeles, Secretario Académico at secretaria.academica@inecol.edu.mx always cc'ing maluja.dirgral@inecol.edu.mx. Three letters of recommendation are needed as well as the e-mail addresses and telephones of three established scientists/professors that have agreed to be interviewed

on the candidate's strengths and weaknesses. An additional letter by the candidate expressing interest in the job, explaining how exactly her/his training/experience fits the job description, and expressing her/his willingness to strictly adhere to the principles of collaboration, team working, networking and scientific integrity is also needed. Any questions should be addressed to Dr. Guillermo Angeles.

6. RESEARCH SCIENTIST IN PLANT GENOMICS

ONE POSITION IS AVAILABLE

Position Title: Researcher (Investigador Titular A).

Employment Status: Full-Time, 12 months. The appointment is renewable depending upon performance and funding. After three years, candidates can apply for tenure.

General Description: The selected candidate is expected to lead research towards the elucidation of complex plant genomes and comparative genomics of fruit trees of major importance for Mexico, including avocado, mango, plum, citrus, and guava. The successful candidate will join Biomimic, a multidisciplinary team working on the protection and rational use of Mexican biodiversity, and will interact directly with another scientist of the team specialized in functional genomics, and two technicians trained on molecular biology techniques, as well as two bioinformaticians. The main aim of the research team is to define molecular markers associated with pest and disease resistance, particularly emerging problems or those causing severe negative effects on productivity. Biomimic provides access to state of the art high-throughput DNA sequencing equipment, including all technologies available in the market, and bioinformatics facilities. Solid experience in genetics and genomics is required, as well as strong grant-writing, computer, and oral/writing skills. Experience working with fruit trees is highly desirable but not absolutely necessary (selected candidate is expected to quickly gain experience in the area). Experience in plant-microbe and/or plant-insect interactions is desirable but not indispensable.

To foster a broad understanding of the aims of the Biomimic cluster among the new scientific staff, once recruited, the candidate will spend a period of 2-6 months in either the Laboratorio Nacional de Genómica para la Biodiversidad (LANGEBIO), Unidad Irapuato of CINVESTAV, or Centro de Investigación Científica de Yucatán (CICY) to establish productive collaborations, write collaborative grants, and to foster long-term collaborative research projects. The candidate will then return to the brand new facilities at INECOL's headquarters equipped with state-of-the art technologies to facilitate high quality academic and technological research.

Responsibilities:

- Carry out research at the cutting edge of knowledge.
- Establish genome sequencing and analyses in collaboration with a scientist working on functional genomics.
- Define molecular markers associated with pest and disease resistance, particularly emerging problems or those causing severe negative effects on productivity.
- Participate in projects leading to the legal protection of genomic information of Mexican biodiversity.
- Teaching at INECOL Master's and Doctorate programs.
- Supervising graduate and undergraduate students.
- Write competitive grants to fund research activities submitted to Mexican and international organizations/government agencies, and private companies.

- Carry out research at the cutting edge of knowledge to be published in internationally recognized journals and books.
- Publish high quality papers in internationally recognized scientific journals, and occasionally in books, national and outreach journals and popular magazines intended for the general public.
- Write or help write patents.
- Help recruit talents for science and technology among primary, secondary and high school students.

Qualifications:

- Doctoral degree in Molecular Biology or Genomics.
- At least one postdoctoral position in area of expertise.
- Special attention will be granted to those candidates having obtained outstanding research achievements during their doctoral studies.
- Expertise in genome sequencing and analysis strategies is essential.
- Bioinformatics abilities are desirable but not essential. However, the candidate is expected to be familiar with the bioinformatics tools used in genome analyses.
- Experience living and working in Latin America is desirable but not essential.
- Fluency or a willingness to learn Spanish, both spoken and written, is required; as are written and spoken skills in English.
- Excellent interpersonal and multitasking skills, ability to negotiate, to deal with pressure, complex situations and stress.
- Work outside of regular business hours including weekends and travel is occasionally required.
- Commitment to ethics/scientific integrity.
- Skills in constructing and working in multidisciplinary teams as part of multidisciplinary projects.
- Ability to work with private sector as well as government agencies.
- A spirit of collaboration/team working and service to society.
- A driving license.
- Authorship of at least 5 recent scientific publications (at least three as first author or corresponding author), in high quality international indexed journals.
- Write or help write patents.

Interested candidates from Mexico **and elsewhere in the entire world** should send their updated *Curriculum Vitae* and additional support material of particular value for members of the Search Committee (e.g., citation record, relevant awards, narrative of particular achievements or contributions to science) to Dr. Guillermo Angeles, Secretario Académico at secretaria.academica@inecol.edu.mx always cc'ing maluja.dirgral@inecol.edu.mx. Three letters of recommendation are needed as well as the e-mail addresses and telephones of three established scientists/professors that have agreed to be interviewed on the candidate's strengths and weaknesses. An additional letter by the candidate expressing interest in the job, explaining how exactly her/his training/experience fits the job description, and expressing her/his willingness to strictly adhere to the principles of collaboration, team working, networking and scientific integrity is also needed. Any questions should be addressed to Dr. Guillermo Angeles.

7. RESEARCH SCIENTIST IN PLANT PROTEOMICS and TRANSCRIPTOMICS

ONE POSITION IS AVAILABLE

Position Title: Researcher (Investigador Titular A or Titular B).

Employment Status: Full-Time, 12 months. The appointment is renewable depending upon performance and funding. After three years, candidates can apply for tenure.

General Description: Although the combination of fields is not common, we are seeking a candidate expected to lead research in the area of plant proteomics **and** transcriptomics. The main aim of the research team, that the successful candidate will join, is to find alternatives to deal with emerging pests and diseases of fruit trees of major importance for Mexico, including avocado, mango, plum, citrus, and guava. The contributions expected from the selected candidate will also be related to the analysis of the transcriptional **and** proteomic responses of plants to biotic and abiotic stress, such as drought. The successful candidate will join Biomimic, a multidisciplinary team working on the protection and rational use of Mexican biodiversity, and will directly interact with other scientists of the team specialized in structural genomics, structural and chemical basis of plant resistance to insect pests, and technicians trained in molecular biology techniques, as well as two bioinformaticians. Biomimic provides access to state of the art high-throughput DNA sequencing equipment, and bioinformatics facilities. Solid experience in genomics, transcriptomics, proteomics and statistics is required, as well as strong grant-writing, computer, and oral/writing skills. Experience working with fruit trees is highly desirable but not absolutely necessary (selected candidate is expected to quickly gain experience in the area). Experience in plant-microbe and/or plant-insect interactions is desirable but not indispensable.

To foster a broad understanding of the aims of the Biomimic cluster among the new scientific staff, once recruited, the candidate will spend a period of 2-6 months in either the Laboratorio Nacional de Genómica para la Biodiversidad (LANGEBIO), Unidad Irapuato of CINVESTAV, or Centro de Investigación Científica de Yucatán (CICY) to establish productive collaborations, write collaborative grants, and to foster long-term collaborative research projects. The candidate will then return to the brand new facilities at INECOL's headquarters equipped with state-of-the art technologies to facilitate high quality academic and technological research.

Responsibilities:

- Carry out research at the cutting edge of knowledge.
- Establish proteomic/transcriptomic analyses in collaboration with scientists working on structural genomics and structural and chemical basis of plant resistance to insect pests of fruit trees.
- Carry out research towards the elucidation of proteomic and transcriptional responses of plants to biotic and abiotic stress.
- Participate in projects leading to the legal protection of genomic information of Mexican biodiversity.
- Teaching at INECOL Master's and Doctorate programs.
- Supervising graduate and undergraduate students.

- Write competitive grants to fund research activities submitted to Mexican and international organizations/government agencies, and private companies.
- Publish high quality papers in internationally recognized scientific journals, and occasionally in books, national and outreach journals and popular magazines intended for the general public.
- Write or help write patents.
- Help recruit talents for science and technology among primary, secondary and high school students.

Qualifications:

- Doctoral degree in molecular biology or plant proteomics/transcriptomics.
- At least one postdoctoral position in area of expertise.
- Special attention will be granted to those candidates having obtained outstanding research achievements during their doctoral studies.
- Expertise in proteomic analyses.
- Expertise in RNAseq, microarrays, and the corresponding analysis tools are essential.
- Bioinformatics abilities are desirable but not essential. However, the candidate is expected to be familiar with the bioinformatics tools used in proteome and transcriptome analyses.
- Experience living and working in Latin America is desirable but not required.
- Fluency or a willingness to learn Spanish, both spoken and written, is required; as are written and spoken skills in English.
- Excellent interpersonal and multitasking skills, ability to negotiate, to deal with pressure, complex situations and stress.
- Work outside of regular business hours including weekends and travel is occasionally required.
- Commitment to ethics/scientific integrity.
- Ability to work with private sector as well as government agencies.
- Skills in constructing and working in multidisciplinary teams as part of multidisciplinary projects.
- A spirit of collaboration/team working and service to society.
- A driving license.
- Authorship of at least 5 recent scientific publications (at least three as first author or corresponding author), in high quality international indexed journals.

Interested candidates from Mexico **and elsewhere in the entire world** should send their updated *Curriculum Vitae* and additional support material of particular value for members of the Search Committee (e.g., citation record, relevant awards, narrative of particular achievements or contributions to science) to Dr. Guillermo Angeles, Secretario Académico at secretaria.academica@inecol.edu.mx always cc'ing maluja.dirgral@inecol.edu.mx. Three letters of recommendation are needed as well as the e-mail addresses and telephones of three established scientists/professors that have agreed to be interviewed on the candidate's strengths and weaknesses. An additional letter by the candidate expressing interest in the job, explaining how exactly her/his training/experience fits the job description, and expressing her/his willingness to strictly adhere to the principles of collaboration, team working, networking and scientific integrity is also needed. Any questions should be addressed to Dr. Guillermo Angeles.

8. RESEARCH SCIENTIST: SYMBIOTIC INTERACTIONS BETWEEN INSECTS AND MICROORGANISMS (MOLECULAR BIOLOGIST)

ONE POSITION IS AVAILABLE

Position Title: Researcher (Investigador Titular A).

Employment Status: Full-Time, 12 months. The appointment is renewable depending upon performance and funding. After three years, candidates can apply for tenure.

General Description: The main objective of this position is to develop an understanding of the molecular biology of insect symbiosis and its potential applications in pest control. Scientific effort will be directed at the characterization of different insect symbiotic associations towards the development of non-chemical control methods against agricultural, environmental and medical insect pests, as well as the exploration of their metagenomes to identify novel compounds with potential biotechnological applications. This line of research should provide: (i) improved understanding of the symbiotic microbiota associated with important agricultural and medical pests in Mexico, (ii) characterize symbiont population dynamics and determine their effects on host fitness, and pathogen transmission capabilities, (iii) coordinate efforts between research and industry for the development of symbiont-based control methods to address major pest issues in agriculture and public health, (iv) the use of metagenomics as a tool for insect symbiont bioprospecting to identify novel biotechnologically important products.

To foster a broad understanding of the aims of the Biomimic cluster among the new scientific staff, once recruited, the candidate will spend a period of 2-6 months in either the Laboratorio Nacional de Genómica para la Biodiversidad (LANGEBIO) or the Unidad Irapuato of CINVESTAV to establish productive collaborations, write collaborative grants, and to foster long-term collaborative research projects. The candidate will then return to the brand new facilities at INECOL's headquarters equipped with state-of-the art technologies to facilitate high quality academic and technological research.

Responsibilities:

- Carry out research at the cutting edge of knowledge.
- Lead research on insect-symbiont metagenomes, improved protocols and ultrafast sequencing technologies for symbiont genomics and insect metagenomics studies.
- Perform sequencing of insect symbiont genomes and bioinformatics tools for symbiont genomes and metagenome exploration.
- *In silico* identification of candidate gene products with a potential for commercial exploitation.
- Characterization of host-symbiont interactions using an integrated approach (i.e., genetic, molecular, cellular, biochemical and immunological approaches will be considered).
- In cooperation with other areas, to study the population dynamics, transmission pathways and effects of symbionts on major agricultural, forest and medically important insect pests, disease vectors, and beneficial insects (e.g., parasitoids, predators, etc.).

- Interaction of symbionts with the insect host and other symbionts. Role of symbionts in pathogen transmission.
- The candidate will collaborate extensively with other researchers of the Biomimic cluster, both in providing insect molecular biology related services to the Biomimic community and by participation in collaborative studies.
- Teaching in INECOL Master's and Doctorate programs.
- Supervising graduate and undergraduate students.
- Write competitive grants to fund research activities submitted to Mexican and international organizations/government agencies, and also to commercial companies.
- Publish high quality papers in internationally recognized scientific journals, and occasionally in books, national and outreach journals and popular magazines intended for the general public.
- Write or help write patents.
- Help recruit talents for science and technology among primary, secondary and high school students.

Qualifications:

- Doctoral degree in Insect Molecular Biology.
- At least one postdoctoral position in area of expertise.
- Special attention will be granted to those candidates having obtained outstanding research achievements during their doctoral studies.
- Expertise in genomics, metagenomics, bioinformatics and insect experimental systems.
- Experience living and working in Latin America is desirable but not required.
- Fluency or a willingness to learn Spanish, both spoken and written, is required; as are written and spoken skills in English.
- Excellent interpersonal and multitasking skills, ability to negotiate, to deal with pressure, complex situations and stress.
- Work outside of regular business hours including weekends and travel is occasionally required.
- Commitment to ethics/scientific integrity.
- Ability to work with private sector as well as government agencies.
- Skills in constructing and working in multidisciplinary teams as part of multidisciplinary projects.
- A spirit of collaboration/team working and service to society.
- A driving license.
- Authorship of at least 5 recent scientific publications (at least three as first author or corresponding author), in high quality international indexed journals.

Interested candidates from Mexico **and elsewhere in the entire world** should send their updated *Curriculum Vitae* and additional support material of particular value for members of the Search Committee (e.g., citation record, relevant awards, narrative of particular achievements or contributions to science) to Dr. Guillermo Angeles, Secretario Académico

at secretaria.academica@inecol.edu.mx always cc'ing maluja.dirgral@inecol.edu.mx. Three letters of recommendation are needed as well as the e-mail addresses and telephones of three established scientists/professors that have agreed to be interviewed on the candidate's strengths and weaknesses. An additional letter by the candidate expressing interest in the job, explaining how exactly her/his training/experience fits the job description, and expressing her/his willingness to strictly adhere to the principles of collaboration, team working, networking and scientific integrity is also needed. Any questions should be addressed to Dr. Guillermo Angeles.

9. RESEARCH SCIENTIST: NATURAL PRODUCTS CHEMISTRY, PARTICULARLY PLANT SECONDARY METABOLITES

ONE POSITION IS AVAILABLE

Position Title: Researcher (Investigador Titular A).

Employment Status: Full-Time, 12 months. The appointment is renewable depending upon performance and funding. After three years, candidates can apply for tenure.

General Description: The selected candidate is expected to lead research in the area of plant secondary chemistry in research programs on plant-insect and plant-pathogen interactions, focused mainly on the chemical basis of plant resistance. The successful candidate will join Biomimic, a multidisciplinary team working on the chemical basis of plant resistance that will cover the ecochemical importance of phenolic compounds, cyanogenics, alkaloids, glucosynolates and their potential synthesis. Studies will also include research on plant secondary metabolic pathways (e.g., phenylpropanoid biosynthesis) when plant resistance enhancers, growth regulators are applied on fruit trees. Secondary metabolite characterization, gene expression and its influence on plant resistance phenotype will also be analyzed with the aim of identifying genes and markers of importance for breeding programs and the development of resistant cultivars.

To foster a broad understanding of the aims of the Biomimic cluster among the new scientific staff, once recruited, the candidate will spend a period of 2-6 months in CIMAV (Centro de Investigación en Materiales Avanzados), CIQA (Centro de Investigación en Química Aplicada) or CICY (Centro de Investigación Científica de Yucatán) to establish productive collaborations, write collaborative grants, and to foster long-term research projects. The candidate will then return to the brand new facilities equipped with state-of-the art technologies to perform high quality academic and technological studies. The recruited natural products chemist will actively collaborate with agronomists, biologists, ecologists, molecular biologists, chemists, biochemists, and microbiologists to produce novel solutions to Mexico's most pressing problems/challenges. The recruited scientist will also meet on a regular basis with industry and government representatives to identify demands, common interests and suitable funding sources.

Responsibilities:

- Carry out research at the cutting edge of knowledge.
- Carry out research towards the elucidation of the function of organic compounds, specifically plant secondary metabolites related to plant resistance in plant-insect and plant-pathogen interactions.
- Developing and improving advanced analytical (HPLC, LC-MS-TOF, GC-MS, FT-IR) and bromatological methods to quantify and identify nutrients and secondary metabolites in tissue.
- The candidate will collaborate extensively with other researchers of the Biomimic cluster and will participate in collaborative studies related of plant chemistry.
- Teaching in INECOL Master's and Doctorate programs.
- Supervising graduate and undergraduate students.

- Write competitive grants to fund research activities submitted to Mexican and international organizations/government agencies, and also to commercial companies.
- Publish high quality papers in internationally recognized scientific journals, and occasionally in books, national and outreach journals and popular magazines intended for the general public.
- Write or help write patents.
- Help recruit talents for science and technology among primary, secondary and high school students.

Qualifications:

- Bachelor's degree in chemistry, biochemistry, biotechnology or a closely related discipline with a doctoral degree in biotechnology.
- At least one postdoctoral position in area of expertise.
- Special attention will be granted to those candidates having obtained outstanding research achievements during their doctoral studies.
- Experience of analytical techniques such as UHPLC, LC-MS-TOF, GC-MS, FT-IR spectroscopy.
- Experience living and working in Latin America is desirable but not required.
- Fluency or a willingness to learn Spanish, both spoken and written, is required; as are written and spoken skills in English.
- Excellent interpersonal and multitasking skills, ability to negotiate, to deal with pressure, complex situations and stress.
- Work outside of regular business hours including weekends and travel is occasionally required.
- Commitment to ethics/scientific integrity.
- Ability to work with private sector as well as government agencies.
- Skills in constructing and working in multidisciplinary teams as part of multidisciplinary projects.
- A spirit of collaboration/team working and service to society.
- A driving license.
- Authorship of at least 5 recent scientific publications (at least three as first author or corresponding author), in high quality international indexed journals.

Interested candidates from Mexico **and elsewhere in the entire world** should send their updated *Curriculum Vitae* and additional support material of particular value for members of the Search Committee (e.g., citation record, relevant awards, narrative of particular achievements or contributions to science) to Dr. Guillermo Angeles, Secretario Académico at secretaria.academica@inecol.edu.mx always cc'ing maluja.dirgral@inecol.edu.mx. Three letters of recommendation are needed as well as the e-mail addresses and telephones of three established scientists/professors that have agreed to be interviewed on the candidate's strengths and weaknesses. An additional letter by the candidate expressing interest in the job, explaining how exactly her/his training/experience fits the job description, and expressing her/his willingness to strictly adhere to the principles of collaboration, team working, networking and scientific integrity is also needed. Any questions should be addressed to Dr. Guillermo Angeles.

10. RESEARCH SCIENTIST: INSECT/ANIMAL CHEMICAL ECOLOGIST

ONE POSITION IS AVAILABLE

Position Title: Researcher (Investigador Titular A).

Employment Status: Full-Time, 12 months. The appointment is renewable depending upon performance and funding. After three years, candidates can apply for tenure.

General Description: The successful candidate will develop a line of research directed at elucidating the chemical mechanisms involved in insect-plant and insect-insect interactions as well as the interactions between/among other animals. The applicant will work in the Biomimic cluster, newly established biomimicry-inspired Scientific and Technological laboratories, developing diverse projects focused in generating solutions of pests, diseases or environmental problems through the identification and isolation and use of plant secondary metabolites related to plant resistance in plant-insect and plant-pathogen interactions, semiochemicals involved in the plant-herbivore, parasitoid and predator-host relationships, as well as sexual (e.g., pheromones), protection (e.g., alarm pheromones) and social (e.g., aggregation and host marking pheromone). The candidate will study physiological, chemical and behavioral aspects of plant-insect and plant-animal interactions, and develop projects and collaborations with other members of the Biomimic cluster and other researchers at INECOL and associated institutions, such as CIQA (Centro de Investigación en Química Aplicada) or CICY (Centro de Investigación Científica de Yucatán).

To foster a broad understanding of the aims of the Biomimic cluster among the new scientific staff, once recruited, the candidate will spend a period of 2-6 months in CIQA (Centro de Investigación en Química Aplicada), CICY (Centro de Investigación Científica de Yucatán) or the Instituto de Ecología at UNAM to establish productive collaborations, write collaborative grants, and to foster long-term research projects. The candidate will then return to the brand new facilities equipped with state-of-the art technologies to perform high quality academic and technological studies. The recruited scientist will actively collaborate with agronomists, biologists, ecologists, molecular biologists, chemists, biochemists, and microbiologists to produce novel solutions to Mexico's most pressing problems/challenges. The recruited scientist will also meet on a regular basis with industry and government representatives to identify demands, common interests and suitable funding sources.

Responsibilities:

- The successful candidate will perform the highest quality research at the cutting edge of knowledge on the identification of chemicals that modulate insect behavior (i.e., pheromones, parapheromones, kairomones, allomones, etc.) and on the behavior of insects in response to these chemicals. Researcher is expected to also collaborate with scientists working on microorganisms and animals such as mammals, birds, reptiles, and fish if time permits.
- Develop and supervise applied insect chemical ecology projects focused on species of direct agricultural importance in Mexico.
- Collaborate on studies on the isolation, characterization and potential synthesis of volatile compounds produced by species of the family Lauraceae that are native to

Mexico, with the aim of developing and testing novel attractants for traps targeted at native and exotic insect pests of “Hass” avocados and other cultivars such as the “Red Bay Ambrosia Beetle” (*Xyleborus glabratus*) or the “Tea Shot Hole Borer” (*Euwallacea fornicatus*), that vector a lethal pathogen (*Fusarium* sp.) as well as other insects of economic importance that attack commercially valuable fruit.

- Characterization of insect responses to plant derived or insect/animal derived compounds.
- Chemical analyses of substances using gas chromatography (GC) and GC-mass spectrometry **and other state-of-the-art equipment** for chemical analyses of plant, insect or animal derived substances.
- Solid knowledge of statistics applied to chemistry, biology or other pertinent fields.
- Use of established techniques (EAG, olfactometer, wind tunnel responses) to determine the response of insects to a range of chemical substances derived from natural or synthetic sources is necessary.
- Use of electroantenography and electrotarsography.
- The candidate will collaborate extensively with other researchers of the Biomimic cluster.
- Teaching in INECOL Master's and Doctorate programs.
- Supervising graduate and undergraduate students.
- Write competitive grants to fund research activities submitted to Mexican and international organizations/government agencies, and also to commercial companies.
- Publish high quality papers in internationally recognized scientific journals, and occasionally in books, national and outreach journals and popular magazines intended for the general public.
- Write or help write patents.
- Help recruit talents for science and technology among primary, secondary and high school students.

Qualifications:

- Bachelor’s degree in chemistry, biochemistry, biology or a closely related discipline with a PhD/doctoral degree in insect chemical ecology or closely related field.
- At least one postdoctoral position in area of expertise.
- Special attention will be granted to those candidates having obtained outstanding research achievements during their doctoral studies.
- Expertise in advanced analytical procedures (HPLC, LC-MS-TOF, GC-MS, FT-IR) **and other state-of-the-art equipment** for chemical analyses of plant or insect derived substances as well as bromatological methods to quantify and identify nutrients and secondary metabolites in tissue.
- Ample experience in the use of established techniques (EAG, olfactometer, wind tunnel responses) to determine the response of insects or other animals to a range of chemical substances derived from natural or synthetic sources is necessary.
- Experience in electroantenography and electrotarsography is desirable.
- Fluency or a willingness to learn Spanish, both spoken and written, is required, as are written and spoken skills in English.
- Excellent interpersonal and multitasking skills, ability to negotiate, to deal with pressure, complex situations and stress.
- Work outside of regular business hours including weekends and travel is occasionally required.

- Commitment to ethics/scientific integrity.
- Ability to work with private sector as well as government agencies.
- Skills in constructing and working in multidisciplinary teams as part of multidisciplinary projects.
- A spirit of collaboration/team working and service to society.
- A driving license.
- Authorship of at least 5 recent scientific publications (at least three as first author or corresponding author), in high quality international indexed journals.

Interested candidates from Mexico **and elsewhere in the entire world** should send their updated *Curriculum Vitae* and additional support material of particular value for members of the Search Committee (e.g., citation record, relevant awards, narrative of particular achievements or contributions to science) to Dr. Guillermo Angeles, Secretario Académico at secretaria.academica@inecol.edu.mx always cc'ing maluja.dirgral@inecol.edu.mx. Three letters of recommendation are needed as well as the e-mail addresses and telephones of three established scientists/professors that have agreed to be interviewed on the candidate's strengths and weaknesses. An additional letter by the candidate expressing interest in the job, explaining how exactly her/his training/experience fits the job description, and expressing her/his willingness to strictly adhere to the principles of collaboration, team working, networking and scientific integrity is also needed. Any questions should be addressed to Dr. Guillermo Angeles.

11. ENDOWED RESEARCH SCIENTIST IN BIORATIONAL AVOCADO (*Persea americana*) PEST AND DISEASE MANAGEMENT

ONE POSITION IS AVAILABLE

Position Title: Researcher (Investigador Titular A or Titular B).

Employment Status: Full-Time, 12 months. The appointment is renewable depending upon performance and funding. After three years, candidates can apply for tenure.

General Description: The Asociación de Productores, Empacadores, y Exportadores de Aguacate de Michoacán, A.C. (henceforth APEAM) is a Mexican association of avocado (= *Persea americana* cultivar Hass, henceforth Hass avocados) producers, exporters and packers that has its headquarters in the centre of the Hass avocado-growing region in Uruapan, Michoacán State, Mexico. APEAM and INECOL have agreed that the search for sustainable solutions to phytosanitary issues affecting avocado production in Mexico requires the highest quality research and technological advancement programs. To this end, an endowed research position has been established using funds donated by APEAM as an initiative to provide scientific and technological answers to the phytosanitary and crop production demands of *Persea americana* cultivar Hass growers in this region and elsewhere in Mexico.

The researcher will be based at INECOL's headquarters in Xalapa, Veracruz, Mexico, but will be expected to travel and work extensively in the *Persea americana* cultivar Hass growing region around Uruapan, Michoacán and elsewhere in Mexico. To foster a broad understanding of the aims of the Biomimic cluster among the new scientific staff, once recruited, the candidate will possibly spend a period of 1-3 months in either the Laboratorio Nacional de Genómica para la Biodiversidad (LANGEBIO) or CICY (Centro de Investigación Científica de Yucatán) to establish productive collaborations, write collaborative grants, and to foster long-term research projects. The candidate will then return to the brand new facilities equipped with state-of-the art technologies to perform high quality academic and technological studies. The recruited computational chemist will actively collaborate with agronomists, biologists, ecologists, molecular biologists, chemists, biochemists, and microbiologists to produce novel solutions to Mexico's most pressing problems/challenges. The recruited scientists will also meet on a regular basis with industry and government representatives to identify demands, common interests and suitable funding sources.

Responsibilities: The research scientist that will occupy this position will lead an innovative research program in the following priority areas.

- Develop a profound understanding of the biology, ecology and behavior of the principal insect pests of economic importance in avocado orchards in the state of Michoacán, and elsewhere in México, particularly seed weevils (e.g., *Conotrachelus perseae*, *Conotrachelus spp*.), branch weevils (e.g, *Copturus aguacateae*), mites (e.g., *Oligonychus punicata*, *O*. *perseae*) and avocado scales (e.g., *Apgrallaspis* spp., *Chrysomphalus aonidum*, and *Hemiberlesia lataniae*).
- Develop and evaluate novel biorational methods of pest and disease management in *Persea americana* grown in the states of Michoacán, Veracruz and elsewhere in Mexico.

- Develop economic feasibility studies of alternatives to the control of important avocado pests, such as seed weevils (e.g., *Conotrachelus perseae*, *C. spp*.), branch weevils (e.g, *Copturus aguacateae*), mites (e.g., *Oligonychus punicata*, *O. perseae*) and avocado scales (e.g., *Apgrallaspis* spp., *Chrysomphalus aonidum*, and *Hemiberlesia lataniae*).
- Collaborate on studies on the isolation, characterization and potential synthesis of volatile compounds produced by species of the family Lauraceae that are native to Mexico, with the aim of developing and testing novel attractants for traps targeted at native and exotic insect pests of "Hass" avocados and other cultivars such as the "Red Bay Ambrosia Beetle" (*Xyleborus glabratus*) or the "Tea Shot Hole Borer" (*Euwallacea fornicatus*), that vector a lethal pathogen (*Fusarium* sp.) of interest to APEAM.
- To help develop improved *Persea americana* cultivars, the candidate will collaborate extensively with other researchers of the BioMimic cluster, participating in collaborative studies with scientists involved in plant genomics, transcriptomics and proteomics, and/or molecular biology/chemical ecology of plant resistance to pests and diseases.
- Participate/collaborate in studies on genomics, transcriptomics or proteomics of native members of the Lauraceae family aimed at identifying pest and disease resistance mechanisms that could be employed to transfer resistance to Hass avocados or other cultivars of interest to APEAM.
- Perform spatially explicit niche modeling studies to define the potential areas of infestation by threatening exotic insect pests, such as the "Red Bay Ambrosia Beetle" (*Xyleborus glabratus*) or the "Tea Shot Hole Borer" (*Euwallacea fornicatus*), that vector a lethal pathogen (*Fusarium* sp.) of avocados and other members of the Lauraceae.
- Participate in studies focused on the development of novel tissue culture techniques that will permit an industrial scale production of disease-free avocado plants. Once established, these techniques will be employed in a mass production facility to supply the needs of APEAM members.
- Participate in studies on the development of novel pesticide formulations that could effectively reduce the quantities of pesticides applied to *Persea americana* trees for pest and disease control, through the use of nanotechnology-based techniques to improve the efficacy of these products in the field.
- Lead studies on mapping the precise distribution of the principal pests and diseases of avocado in the state of Michoacán (and elsewhere in Mexico), and determination of the principal biotic and abiotic factors that determine the distribution and prevalence of pests and diseases of avocado in the state of Michoacán and elsewhere in México. Studies on insect borers of stems and seeds are particularly important in this respect.
- Lead studies aimed at establishing a faunistic and floristic inventory (reference collection) of organisms present in *Persea americana* orchards in the states of Veracruz and Michoacán (and elsewhere in Mexico), with particular reference to pests and diseases of avocado and their natural enemies.
- Help create a reference collection of germplasm based on native species of *Persea* and closely related species that grow in the different states of Mexico.
- Develop mid- to long-term strategies aimed at coping with phytosanitary restrictions imposed on the basis of pesticide residue issues that hinder export of avocados to lucrative markets in the future.
- Identify and quantify the key factors that limit the production of *Persea americana* in the states of Michoacán, Veracruz and elsewhere in México, with particular reference

to agronomic practices and local ecosystem services and likely future projections of the role of these factors as determinants in avocado production.

- Collaborate extensively with other researchers of the Biomimic cluster.
- Teaching in INECOL Master's and Doctorate programs welcome but not mandatory.
- Supervising graduate and undergraduate students welcome but not mandatory.
- Write competitive grants to fund research activities submitted to Mexican and international organizations/government agencies, and also to commercial companies.
- Publish high quality papers in internationally recognized scientific journals, and occasionally in books, national and outreach journals and popular magazines intended for the general public.
- Write or help write patents.

Qualifications:

- Doctor degree in entomology or another discipline of clear relevance to the objectives of the endowed position. Ideally, research leading to PhD or doctorate was related to *Persea americana* or other economically important species within the Lauraceae.
- At least one postdoctoral position focused on avocado pests and diseases and avocado pest and disease control.
- Special attention will be granted to those candidates having obtained outstanding research achievements during their doctoral studies.
- Experience in molecular biology tools for breeding purposes.
- Experience living and working in Latin America is desirable but not essential.
- Fluency or a willingness to learn Spanish, both spoken and written, is required; as are written and spoken skills in English.
- Excellent interpersonal and multitasking skills, ability to negotiate, to deal with pressure, complex situations and stress.
- Proven grant-writing skills.
- Ability to work with the private sector as well as government agencies.
- Work outside of regular business hours including weekends and travel is occasionally required.
- Commitment to ethics/scientific integrity.
- A spirit of collaboration/team working and service to society.
- A driving license.
- Authorship of at least 5 recent scientific publications (at least three as first author or corresponding author), in high quality international indexed journals.

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collaboration, team working, networking and scientific integrity is also needed. Any questions should be addressed to Dr. Guillermo Angeles.

RESEARCH TECHNICIAN IN BIOINFORMATICS

TWO POSITIONS ARE AVAILABLE

Position Title: Technician (Técnico Titular A).

Employment Status: Full-Time, 12 months. The appointment is renewable depending upon performance and funding. After three years, candidates can apply for tenure.

General Description: The selected candidate will be part of a team working on the elucidation of complex plant genomes, comparative and functional genomics of fruit trees of major importance for Mexico, including avocado, mango, citrus, apple, and guava. The main aim of the research team that the successful candidate will join is to find alternatives to deal with emerging pests and diseases of fruit trees in Mexico. The successful candidate will join Biomimic, a multidisciplinary team working on the protection of Mexican biodiversity, and will interact with a team of specialists in genomics, molecular biology, and bioinformatics. Biomimic provides access to state of the art high-throughput DNA sequencing equipment, and bioinformatics facilities. Knowledge of genetics, molecular biology, and genomics is required. Experience working with fruit trees is not necessary but the selected candidate is expected to quickly gain experience in the area; experience in plant-microbe and/or plant-insect interactions is desirable but not indispensable.

Responsibilities:

- Help generate research at the cutting edge of knowledge.
- Actively participate in a genome sequencing and analysis team in collaboration with other scientists.
- Participate in projects leading to the legal protection of genomic information of Mexican biodiversity.
- Assist in training graduate students at INECOL, CIMAV, CIQA, CICY, LANGEBIO and CINVESTAV Irapuato.
- Supervise undergraduate student projects.
- Provide technical support to research performed by graduate students.
- Provide scientists with access to a selection of bioinformatic tools, as well as to data storage and computer resources to apply those tools.
- Solid knowledge of statistics applied to biology or other pertinent fields.
- Carry out specific data analyses requested by senior scientists.
- Collaborate in cutting edge research to be published in internationally recognized journals and books.
- Help write patents.
- Help recruit talents for science and technology among primary, secondary and high school students.

Qualifications:

- Bachelor's degree in Biochemistry, Biology, Chemistry, Genetics, Genomics, Informatics, Mathematics or Molecular Biology.
- Strong interest in the solution of problems in biology is a must.

- At least one year experience working in the area of bioinformatics.
- Experience working with large and complex databases.
- Programming skills.
- Solid knowledge of statistics applied to biology.
- Reading and writing in English, is required.
- Experience living and working in Latin America is desirable but not essential.
- Excellent interpersonal and multitasking skills, ability to negotiate, to deal with pressure, complex situations and stress.
- Ability to work with the private sector as well as government agencies.
- Work outside of regular business hours including weekends and travel is occasionally required.
- A spirit of collaboration/team working and service to society.
- A driving license.

Additional beneficial skills:

- Expertise in genome sequencing and analysis strategies.
- Knowledge of bioinformatics tools necessary for analysis of genomics data, and the ability to employ such tools.
- Experience in mentoring students.

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RESEARCH TECHNICIAN IN SCANNING ELECTRON MICROSCOPY AND X-RAY DIFFRACTION

ONE POSITION IS AVAILABLE

Position Title: Technician (Técnico Titular A).

Employment Status: Full-Time, 12 months. The appointment is renewable depending upon performance and funding. After three years, candidates can apply for tenure.

General Description: The successful candidate will have an understanding of the theoretical basis of optics or optical physics, a clear analytical approach to problem solving applied to the interpretation of diffraction patterns and the processing of SEM-generated images. These studies will support the work of researchers in organic chemistry, plant secondary compounds and nanotechnology that form part of the Biomimic cluster. As such, the candidate will be working on the identification of compounds present in ceramics, minerals, polymers and other natural and synthetic materials.

Responsibilities:

- Help generate research at the cutting edge of knowledge.
- The candidate will be capable of using analytical and characterization techniques required in the isolation, identification and characterization of organic molecules with industrial and/or medical applications.
- Collaborate in the identification and characterization of novel molecules or materials from naturally-derived precursors aimed at identifying physical or chemical attributes that influence specific physical, chemical or biological characteristics.
- The candidate will collaborate extensively with other researchers of the Biomimic cluster, both in providing technical support in SEM and X-ray diffraction techniques to the Biomimic community and by participation in collaborative studies.
- Innovation or improvement in techniques related to the collection, processing and presentation of results.
- Design of experimental systems and equipment to meet the needs of specific research problems.
- The development of operational guidelines for the maintenance, operation and calibration of specific laboratory equipment.
- Writing of technical reports describing methods, procedures and results of studies performed.
- Maintain the laboratory equipment in optimal working condition and compete for national and international funding to update and extend the range of equipment as necessary.
- Assist in training Master's and Doctorate students at INECOL, CIMAV, CIQA, CICY, LANGEBIO and CINVESTAV Irapuato.
- Provide technical support for the development of graduate student projects.
- Supervise undergraduate student projects.
- Collaboration in the technical aspects of publications in high quality scientific journals and popular magazines intended for the general public.
- Help write patents.

- Help recruit talents for science and technology among primary, secondary and high school students.

Qualifications:

- Bachelor's degree in metallurgy, physics or a related discipline and preferentially a Master's degree in optoelectronics, materials science, chemistry, geology or related disciplines.
- Evidence of having received training in X-ray diffraction studies, such as crystallographic methods or Rietveld analysis (structure profile refinement).
- Experience (~3 years) of practical use of X-ray diffraction techniques, sample preparation techniques, sample component identification, and the management of the relevant databases (ICDD, FindIt, etc.).
- Evidence of having collaborated in productive projects in topics related to his/her area of expertise.
- Knowledge of electronics (basic and digital) would be highly desirable.
- Fluency or a willingness to learn Spanish, both spoken and written, is required; as are written and spoken skills in English.
- Reading and writing in English, is required.
- Solid knowledge of statistics applied to pertinent fields.
- Experience living and working in Latin America is desirable but not essential.
- Excellent interpersonal and multitasking skills, ability to negotiate, to deal with pressure, complex situations and stress.
- Ability to work with the private sector as well as government agencies.
- Skills in constructing and working in multidisciplinary teams, especially in providing technical services related to the production and handling of scanning electron microscopy as part of multidisciplinary projects.
- Work outside of regular business hours including weekends and travel is occasionally required.
- A spirit of collaboration/team working and service to society.
- A driving license.

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RESEARCH TECHNICIAN IN ENVIRONMENTAL SCANNING ELECTRON MICROSCOPY

ONE POSITION IS AVAILABLE

Position Title: Technician (Técnico Titular A).

Employment Status: Full-Time, 12 months. The appointment is renewable depending upon performance and funding. After three years, candidates can apply for tenure.

General Description: The selected candidate will provide scanning electron microscopy (SEM) support, particularly environmental (low-vacuum) SEM, to a team of researchers working on biomimicry, crop protection and nanotechnology. The successful candidate will join Biomimic, a transdisciplinary group of specialists in genomics, bioinformatics, organic chemistry, biorational crop pest control, and agro-nanotechnology.

Experience working on the preparation, manipulation, mounting, and imaging of specimens, preferentially those of biological origin, is required, as is a clear ability to interpret the results of SEM studies, preferably an environmental, 3D low vacuum SEM. The successful candidate will undergo training in advanced SEM techniques, using an environmental, 3D low vacuum SEM. Most or all training and reference literature will be given in English. These studies require a meticulous and painstaking approach to sample preparation and analysis.

Responsibilities:

- Help generate research at the cutting edge of knowledge.
- The selected candidate will provide environmental SEM support to a team of researchers working on biomimicry, crop protection and nanotechnology.
- Preparation, manipulation, mounting, and imaging of specimens and interpretation of the results of environmental SEM studies.
- Innovation or improvement in techniques related to the collection, processing and presentation of results.
- Design of experimental systems and equipment to meet the needs of specific research problems.
- The development of operational guidelines for the maintenance, operation and calibration of the environmental SEM.
- Writing of technical reports describing methods, procedures and results of studies performed.
- Maintain the laboratory equipment in optimal working condition and compete for national and international funding to update and extend the range of equipment as necessary.
- Assist in training Master's and Doctorate students at INECOL, CIMAV, CIQA, CICY, LANGEBIO and CINVESTAV Irapuato.
- Provide technical support for the development of graduate student projects.
- Supervise undergraduate student projects.
- Collaboration in the technical aspects of publications in high quality scientific journals and popular magazines intended for the general public.
- Help write patents.

- Help recruit talents for science and technology among primary, secondary and high school students.

Qualifications:

- Bachelor's or Master's degree in biological sciences or a related discipline would be useful in order to understand the nature of the samples being analyzed.
- Experience in the preparation, handling and imaging of SEM samples is necessary as is experience of standard techniques in microscopy and SEM, preferentially in the area of biology.
- A clear understanding of written and spoken English is essential.
- A practical, proactive approach to problem solving and a willingness to explore alternative methods in SEM research would be highly desirable, as would a precise and conscientious attitude to sample preparation and analysis.
- Reading and writing in English, is required.
- Solid knowledge of statistics applied to biology.
- Experience living and working in Latin America is desirable but not essential.
- Excellent interpersonal and multitasking skills, ability to negotiate, to deal with pressure, complex situations and stress.
- Ability to work with the private sector as well as government agencies.
- Skills in constructing and working in multidisciplinary teams, especially in providing technical services related to the production and handling of environmental scanning electron microscopy as part of multidisciplinary projects.
- Work outside of regular business hours, including weekends and travel is occasionally required.
- A spirit of collaboration/team working and service to society.
- A driving license.

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RESEARCH TECHNICIAN IN ORGANIC CHEMISTRY

ONE POSITION IS AVAILABLE

Position Title: Technician (Técnico Titular A).

Employment Status: Full-Time, 12 months. The appointment is renewable depending upon performance and funding. After three years, candidates can apply for tenure.

General Description: The successful candidate will provide technical support for research on the isolation and identification of organic molecules from natural sources derived from Mexico's enormous natural biodiversity. The identification and characterization of these compounds should find potential applications in medicine, food science, cosmetics, renewable energies, agriculture and industrial uses such as the development of novel formulations for paints, polymers, etc. These lines of research will involve extensive collaboration/team working with other members of the Biomimic cluster in trans-disciplinary projects focused on aspects of Mexico's most pressing environmental, social and development issues.

Responsibilities:

- Help generate research at the cutting edge of knowledge.
- The candidate will be capable of using analytical and characterization techniques required in the isolation, identification and characterization of organic molecules with industrial and/or medical applications.
- Provide technical support in the study of organic molecules derived from or inspired by compounds isolated from plants and microorganisms (in collaboration with an environmental microbiologist).
- Collaborate in the synthesis of novel molecules from naturally-derived precursors to enhance specific physical or bioactive attributes.
- The successful candidate will collaborate extensively with researchers of the Biomimic cluster, both in providing technical support in organic chemistry to the Biomimic community and by participation in collaborative studies.
- Innovation or improvement in techniques related to the collection, processing and presentation of results.
- Design of experimental systems and equipment to meet the needs of specific research problems.
- The development of operational guidelines for the maintenance, operation and calibration of specific laboratory equipment.
- Writing of technical reports describing methods, procedures and results of studies performed.
- Solid knowledge of statistics applied to chemistry or other pertinent fields.
- Development of computer programs and procedures when necessary.
- Maintain the laboratory equipment in optimal working condition and compete for national and international funding to update and extend the range of equipment as necessary.
- Assist in training Master's and Doctorate students at INECOL, CIMAV, CIQA, CICY, LANGEBIO and CINVESTAV Irapuato.
- Provide technical support for the development of graduate student projects.

- Supervise undergraduate student projects.
- Collaboration in the technical aspects of publications in high quality scientific journals and popular magazines intended for the general public.
- Help write patents.
- Help recruit talents for science and technology among primary, secondary and high school students.

Qualifications:

- Master's degree in organic chemistry.
- At least 3 years of experience in area of expertise.
- Experience in the isolation and identification of organic molecules of natural origin (especially plants and/or microorganisms).
- Evidence of abilities in organic synthesis and elucidating reaction mechanisms.
- Experience in the use of analytical tools such as GC-MS, HPLC, FT-IR, NMR, RAMAN, X-ray diffraction.
- Practical knowledge of distillation techniques under varying conditions.
- Reading and writing in English, is required.
- Solid knowledge of statistics.
- Experience living and working in Latin America is desirable but not essential.
- Excellent interpersonal and multitasking skills, ability to negotiate, to deal with pressure, complex situations and stress.
- Ability to work with the private sector as well as government agencies.
- Skills in constructing and working in multidisciplinary teams, especially in providing technical services related to the production and handling of GC-MS, FT-IR, NMR, RAMAN, X-ray diffraction, HPLC as part of multidisciplinary projects.
- Work outside of regular business hours, including weekends and travel is occasionally required.
- A spirit of collaboration/team working and service to society.
- A driving license.

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RESEARCH TECHNICIAN IN ENVIRONMENTAL MICROBIOLOGY (Soil and Insects)

ONE POSITION IS AVAILABLE

Position Title: Technician (Técnico Titular A).

Employment Status: Full-Time, 12 months. The appointment is renewable depending upon performance and funding. After three years, candidates can apply for tenure.

General Description: The selected candidate is expected to provide technical support to microbiologists involved in research programs on soil microbiota and insect symbionts. Soil microbiology research focuses on microorganisms that affect soil fertility, including host-parasite, host-pathogen or plant-microbe systems, and specifically investigate potential impacts of novel nanomaterials and nanocompounds on the dynamics, structure and function of microbial communities in water, soil, rhizosphere, and phylloplane ecosystems. The microbiology of insect symbiosis focuses on the potential applications of these microorganisms in pest control, to provide an improved understanding of the symbiotic microbiota associated with important agricultural and medical pests in Mexico, to characterize symbiont population dynamics and determine their effects on host fitness, and pathogen transmission capabilities, and apply genomics techniques for insect symbiont bioprospecting with the aim of identifying novel biotechnologically important products.

Responsibilities:

- Help generate research at the cutting edge of knowledge.
- The technician will provide support to studies on the effects of soil microbiota on fertility and the beneficial/adverse effects on nanomaterials/nanocompounds on soil microbial communities.
- Host-symbiont interactions, including the characterization of host-symbiont interactions using an integrated approach (i.e., molecular, cellular, biochemical and immunological approaches will be considered).
- In cooperation with other areas, to study the population dynamics, transmission pathways and effects of symbionts on pests, disease vectors, and beneficial insects.
- Interaction of symbionts with the insect host and other symbionts, including the role of symbionts in pathogen transmission.
- The candidate will collaborate extensively with other researchers of the Biomimic cluster in providing microbiology-related technical support.
- Innovation or improvement in techniques related to the collection, processing and presentation of results.
- Design of experimental systems and equipment to meet the needs of specific research problems
- The development of operational guidelines for the maintenance, operation and calibration of specific laboratory equipment.
- Writing of technical reports describing methods, procedures and results of studies performed.
- Development of computer programs and procedures when necessary.

- Solid knowledge of statistics applied to biology or other pertinent fields.
- Maintain the laboratory equipment in optimal working condition and compete for national and international funding to update and extend the range of equipment as necessary.
- Assist in training Master's and Doctorate students at INECOL, CIMAV, CIQA, CICY, LANGEBIO and CINVESTAV Irapuato.
- Provide technical support for graduate student projects.
- Supervise undergraduate student projects.
- Assist in the technical contribution to publications in high quality scientific journals and popular magazines intended for the general public.
- Help write patents.
- Help recruit talents for science and technology among primary, secondary and high school students.

Qualifications:

- A Master's degree in Microbiology or a closely related discipline.
- Experience in the cultivation and identification of microorganisms from natural and managed ecosystems, particularly the soil and insect guts.
- Experience in the application of molecular techniques and of cultivation-independent techniques applied to the characterization of microbial communities (TRFLP, DGGe, ARDRA, etc.).
- Experience in microscopy techniques, including SEM, TEM, confocal microscopy.
- Skills in constructing and working in multidisciplinary teams, and in providing technical services as part of multidisciplinary projects.
- Reading and writing in English, is required.
- Solid knowledge of statistics applied to biology.
- Experience living and working in Latin America is desirable but not essential.
- Excellent interpersonal and multitasking skills, ability to negotiate, to deal with pressure, complex situations and stress.
- Ability to work with the private sector as well as government agencies.
- Work outside of regular business hours, including weekends and travel is occasionally required.
- A spirit of collaboration/team working and service to society.
- A driving license.

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RESEARCH TECHNICIAN IN PLANT GENOMICS

ONE POSITION IS AVAILABLE

Position Title: Technician (Técnico Titular A).

Employment Status: Full-Time, 12 months. The appointment is renewable depending upon performance and funding. After three years, candidates can apply for tenure.

General Description: The selected candidate will be part of a team working on the elucidation of complex plant genomes and comparative genomics of fruit trees of major importance for Mexico, including avocado, mango, plum, citrus, and guava. The main aim of the research team is to define molecular markers associated with pest and disease resistance, particularly emerging problems or those causing severe negative effects on productivity. The successful candidate will join Biomimic, a multidisciplinary team working on the protection of Mexican biodiversity, will interact with a team of specialists on genomics, molecular biology, and bioinformatics. Biomimic provides access to state of the art high-throughput DNA sequencing equipment, including all technologies available in the market, and bioinformatics facilities. Knowledge of genetics, molecular biology, and genomics is required. Experience working with fruit trees is not necessary but the selected candidate is expected to quickly gain experience in the area. Experience in plant-microbe and/or plant-insect interactions is desirable but not indispensable.

Responsibilities:

- Help generate research at the cutting edge of knowledge.
- Actively participate in a sequencing and analysis team in collaboration with other scientists.
- Participate in projects leading to the legal protection of genomic information of Mexican biodiversity.
- Assist in training Master's and Doctorate students at INECOL, CIMAV, CIQA, CICY, LANGEBIO and CINVESTAV Irapuato.
- Analyzing data and interpreting the results of laboratory and field experiments.
- Writing of technical reports describing methods, procedures and results of particular studies.
- Developing operational guidelines for the maintenance, operation and calibration of laboratory equipment.
- Basic maintenance of laboratory equipment.
- Assist in training Master's and Doctorate students at INECOL, CIMAV, CIQA, CICY, LANGEBIO and CINVESTAV Irapuato.
- Provide technical support to the research projects of graduate students.
- Supervise undergraduate student projects.
- Participate in outreach activities.
- Participate in innovative research to be published in internationally recognized journals and books.
- Help write patents.
- Help recruit talents for science and technology among primary, secondary and high school students.

Qualifications:

- Bachelor's degree in Biochemistry, Biology, Chemistry, Molecular Biology, Genetics or Genomics.
- Experience of molecular biology and genomics techniques.
- Knowledge of bioinformatics tools necessary for analysis of genomics data, and the ability to implement such tools.
- Solid knowledge of statistics applied to biology or other pertinent fields.
- Reading and writing in English, is required.
- Bioinformatics abilities and proven experience in field.
- Solid knowledge of statistics applied to biology or other relevant fields.
- Experience living and working in Latin America is desirable but not essential.
- Excellent interpersonal and multitasking skills, ability to negotiate, to deal with pressure, complex situations and stress.
- Ability to work with the private sector as well as government agencies.
- Work outside of regular business hours, including weekends and travel is required.
- A spirit of collaboration/team working and service to society.
- A driving license.

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RESEARCH TECHNICIAN IN PLANT PROTEOMICS/TRANSCRIPTOMICS

ONE POSITION IS AVAILABLE

Position Title: Technician (Técnico Titular A).

Employment Status: Full-Time, 12 months. The appointment is renewable depending upon performance and funding. After three years, candidates can apply for tenure.

General Description: The selected candidate will provide technical support to a research team in the area of plant proteomics and transcriptomics. The main aim of the research team that the successful candidate will join is to find alternatives to deal with emerging pests and diseases of fruit trees of major importance for Mexico. The contributions expected from the selected candidate are related to the analysis of the proteomic and transcriptomal profiles of plants exposed to biotic but also to abiotic stress, such as the attack by an insect, a pathogen or drought. The successful candidate will join Biomimic, a multidisciplinary team working on the protection and rational use of Mexican biodiversity, and will assist a team of experts in genomics, molecular biology, chemical ecology, and bioinformatics. Biomimic provides access to state of the art high-throughput DNA sequencing equipment, including all technologies available in the market, and bioinformatics facilities. Strong knowledge of proteomics, genomics, transcriptomics, and statistics is required, as well as computer skills. Experience working with fruit trees is not necessary but the selected candidate is expected to quickly gain experience in the area. Experience in plant-microbe and/or plant-insect interactions is desirable but not indispensable.

Responsibilities:

- Help generate research at the cutting edge of knowledge.
- Provide technical support to a plant genomics/transcriptomics/proteomics research team in collaboration with other scientists.
- Provide technical support for the elucidation of proteomic and transcriptional responses of plants to biotic and abiotic stress.
- Participate in projects leading to the legal protection of genomic information of Mexican biodiversity.
- Analyzing data and interpreting the results of laboratory and field experiments.
- Writing of technical reports describing methods, procedures and results of particular studies.
- Developing operational guidelines for the maintenance, operation and calibration of laboratory equipment.
- Basic maintenance of laboratory equipment.
- Assist in training Master's and Doctorate students at INECOL, CIMAV, CIQA, CICY, LANGEBIO and CINVESTAV Irapuato.
- Provide support to the research of graduate students.
- Supervise undergraduate student projects.
- Participate in outreach activities.
- Collaborate in the technical aspects of research to be published in internationally recognized journals and books.
- Help write patents.

- Help recruit talents for science and technology among primary, secondary and high school students.

Qualifications:

- Bachelor's degree in Biochemistry, Biology, Chemistry, Molecular Biology or Genomics.
- At least one year experience working in the area.
- Knowledge of RNAseq, microarray, protein characterization tools and the corresponding analysis tools are essential.
- Bioinformatics abilities and proven experience in field.
- Reading and writing in English, is required.
- Solid knowledge of statistics applied to biology and other pertinent fields.
- Experience living and working in Latin America is desirable but not essential.
- Excellent interpersonal and multitasking skills, ability to negotiate, to deal with pressure, complex situations and stress.
- Ability to work with the private sector as well as government agencies.
- Skills in working in multidisciplinary teams.
- Work outside of regular business hours, including weekends and travel is occasionally required.
- A spirit of collaboration/team working and service to society.
- A driving license

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RESEARCH TECHNICIAN IN NATURAL PRODUCTS CHEMISTRY, PARTICULARLY PLANT SECONDARY METABOLITES

ONE POSITION IS AVAILABLE

Position Title: Technician (Técnico Titular A).

Employment Status: Full-Time, 12 months. The appointment is renewable depending upon performance and funding. After three years, candidates can apply for tenure.

General Description: The selected candidate is expected to provide technical support to researchers in entomology, organic chemistry, molecular biology in research programs on plant-insect and plant-pathogen interactions, focused mainly on the chemical basis of plant resistance. Work with animals other than insects will also be expected if time permits. Studies on the chemical basis of plant resistance will cover the ecochemical importance of phenolic compounds, cyanogenics, alkaloids, glucosynolates and their potential synthesis. Studies will also include research on plant secondary metabolic pathways (e.g., phenylpropanoid biosynthesis) when plant resistance enhancers, growth regulators are applied on fruit tree crops in Mexico. Secondary metabolite characterization, gene expression and its influence on plant resistance phenotype will also be analyzed with the aim of identifying genes and markers of importance for breeding programs and the development of resistant cultivars.

Responsibilities: The technician will support researchers by:

- Help generate research at the cutting edge of knowledge.
- Characterizing organic compounds, specifically plant secondary metabolites related to plant resistance in plant-insect and plant-pathogen interactions by using UHPLC-MS-TOF, GC-MS, FT-IR spectroscopy.
- Adopting an integrated approach to these studies that covers chemical, biomolecular, and physiological approaches.
- Developing and improving advanced analytical and bromatological methods to quantify and identify nutrients and secondary metabolites in tissue.
- Analyzing data and interpreting chemical profiles.
- Writing of technical reports describing methods, procedures and results of particular studies.
- Developing operational guidelines for the maintenance, operation and calibration of laboratory equipment.
- Basic maintenance of laboratory equipment.
- The candidate will collaborate extensively with other researchers of the Biomimic cluster in providing plant chemistry-related technical support
- Keeping the laboratory equipment in optimal working condition and provide technical support to the researcher in competing for funding to update and extend the range of equipment as necessary.
- Assist in training Master's and Doctorate students at INECOL, CIMAV, CIQA, CICY, LANGEBIO and CINVESTAV Irapuato.
- Providing technical support for graduate student projects.
- Supervise undergraduate student projects.

- Assisting in the technical contribution to publications in high quality scientific journals and popular magazines intended for the general public.
- Help write patents.
- Help recruit talents for science and technology among primary, secondary and high school students.

Qualifications:

- A Master's degree in Chemistry, Biochemistry, Biotechnology or a closely related discipline.
- Experience in characterization, identification of organic compounds from plant and/or insect tissue.
- Experience of analytical techniques such as UHPLC, LC-MS-TOF, GC-MS, FT-IR
- Reading and writing in English, is required.
- Solid knowledge of statistics applied to biology and other pertinent fields.
- Experience living and working in Latin America is desirable but not essential.
- Excellent interpersonal and multitasking skills, ability to negotiate, to deal with pressure, complex situations and stress.
- Ability to work with the private sector as well as government agencies.
- Skills in working in multidisciplinary teams.
- Work outside of regular business hours, including weekends and travel is occasionally required.
- A spirit of collaboration/team working and service to society.
- A driving license.

Interested candidates from Mexico **and elsewhere in the entire world** should send their updated *Curriculum Vitae* and additional support material of particular value for members of the Search Committee (e.g., citation record, relevant awards, narrative of particular achievements or contributions to science) to Dr. Guillermo Angeles, Secretario Académico at secretaria.academica@inecol.edu.mx always cc'ing maluja.dirgral@inecol.edu.mx. Three letters of recommendation are needed as well as the e-mail addresses and telephones of three established scientists/professors that have agreed to be interviewed on the candidate's strengths and weaknesses. An additional letter by the candidate expressing interest in the job, explaining how exactly her/his training/experience fits the job description, and expressing her/his willingness to strictly adhere to the principles of collaboration, team working, networking and scientific integrity is also needed. Any questions should be addressed to Dr. Guillermo Angeles.

RESEARCH TECHNICIAN IN INSECT/ANIMAL CHEMICAL ECOLOGY

ONE POSITION IS AVAILABLE

Position Title: Technician (Técnico Titular A).

Employment Status: Full-Time, 12 months. The appointment is renewable depending upon performance and funding. After three years, candidates can apply for tenure.

General Description: The selected candidate is expected to provide technical support to researchers in entomology, pest management and behavioral studies in research programs on plant-insect and insect-insect interactions, focused mainly on understanding the chemical ecology of insect pests and their host plants or natural enemies as the basis for the development of innovative and sustainable pest management strategies.

Responsibilities: The technician will support researchers by:

- Helping to generate research at the cutting edge of knowledge.
- Providing technical assistance to the Biomimic cluster and other collaborating researchers in the development and performing of experiments on substances that modulate the behavior of insect pests and their natural enemies.
- Applying established techniques (EAG, olfactometer, wind tunnel responses) to determine the response of insects to a range of chemical substances derived from natural or synthetic sources.
- Assisting in the technical aspects of laboratory and field studies on nutritional ecology of insect pests and their natural enemies and in the responses of insect pests to novel trap designs, baits and attractants for the control and monitoring of these pests.
- The successful candidate will collaborate extensively with Biomimic researchers in studies on the sexual conduct of pests and their parasitoids, pest responses to host plant volatiles and potential mechanisms of plant resistance to attack by phytophagous insects. Studies will also focus on characterizing insect responses to plant volatile components and the presence of natural enemies by adopting an integrated approach to these studies that includes chemical, molecular, entomological and physiological approaches where necessary.
- Developing and improving analytical and bromatological methods to quantify and identify nutrients and volatile components.
- Analyzing data and interpreting the results of laboratory and field experiments.
- Writing of technical reports describing methods, procedures and results of particular studies.
- Developing operational guidelines for the maintenance, operation and calibration of laboratory equipment.
- Basic maintenance of laboratory equipment.
- The candidate will collaborate extensively with other researchers of the Biomimic cluster in providing chemical ecology related technical support.
- Keeping the laboratory equipment in optimal working condition and provide technical support to the researcher in competing for funding to update and extend the range of equipment as necessary.
- Assisting in training Master's and Doctorate students at INECOL, CIMAV, CIQA, CICY, LANGEBIO and CINVESTAV Irapuato.

- Providing technical support for graduate student projects.
- Supervising undergraduate student projects.
- Assisting in the technical contribution to publications in high quality scientific journals and popular magazines intended for the general public.
- Help write patents.
- Help recruit talents for science and technology among primary, secondary and high school students.

Qualifications:

- Bachelor's degree in Biology or Chemistry and a Master's degree in Entomology or a closely related discipline.
- Experience in the characterization of insect responses to plant derived or insect derived compounds.
- Experience with the chemical analysis of substances using gas chromatography (GC) and GC-mass spectrometry **and other state-of-the-art equipment** for chemical analyses of plant or insect derived substances.
- Solid knowledge of statistics applied to chemistry, biology or other pertinent fields.
- Experience with established techniques (EAG, olfactometer, wind tunnel responses) to determine the response of insects to a range of chemical substances derived from natural or synthetic sources is necessary.
- Experience with the use of electroantenography is desirable but not essential.
- Experience living and working in Latin America is desirable but not essential.
- Fluency or a willingness to learn Spanish, both spoken and written, is required; as are written and spoken skills in English.
- Excellent interpersonal and multitasking skills, ability to negotiate, to deal with pressure, complex situations and stress.
- Willingness to work outside of regular business hours and travel is desirable.
- A driving license.

Interested candidates from Mexico **and elsewhere in the entire world** should send their updated *Curriculum Vitae* and additional support material of particular value for members of the Search Committee (e.g., citation record, relevant awards, narrative of particular achievements or contributions to science) to Dr. Guillermo Angeles, Secretario Académico at secretaria.academica@inecol.edu.mx always cc'ing maluja.dirgral@inecol.edu.mx. Three letters of recommendation are needed as well as the e-mail addresses and telephones of three established scientists/professors that have agreed to be interviewed on the candidate's strengths and weaknesses. An additional letter by the candidate expressing interest in the job, explaining how exactly her/his training/experience fits the job description, and expressing her/his willingness to strictly adhere to the principles of collaboration, team working, networking and scientific integrity is also needed. Any questions should be addressed to Dr. Guillermo Angeles.