

## **RESEARCH SCIENTIST IN COMPUTATIONAL NANOCHEMISTRY ONE POSITION IS AVAILABLE**

**Position Title:** Research Scientist.

**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<sup>®</sup>) 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, solution of environmental issues, production of materials with potential pharmacological value, as well as those that could prove useful in medicine, food science, cosmetics, renewable energies, agriculture or 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<sup>®</sup> cluster among the recently hired scientific staff, once recruited, the candidate will spend a period of 1-2 months in the Instituto Potosino de Investigación Científica y Tecnológica (IPICYT), Centro de Investigación en Materiales Avanzados (CIMAV), Centro de Investigación en Química Aplicada (CIQA), Centro de Investigación en Alimentación y Desarrollo (CIAD), Laboratorio Nacional de Genómica para la Biodiversidad (LANGEBIO), Unidad Irapuato of CINVESTAV, or the Centro de Investigación Científica de Yucatán (CICY), 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<sup>®</sup> cluster, both in providing computational chemistry related services to the BioMimic<sup>®</sup> community and by participation in collaborative studies.
- Develop highly original innovative solutions to specific problems through new methodologies and software which 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 and outreach journals and popular magazines intended for the general public.
- Write or help to write patents.
- Help to recruit talents for science and technology among primary, secondary and high school students.

#### **Qualifications:**

- Bachelor's degree in chemistry, physics or material sciences with a doctoral degree in computational chemistry.
- At least one postdoctoral position in the area of expertise.
- Special attention will be granted to those candidates having obtained outstanding research achievements during their doctoral studies.
- Expertise in computational software for the design, simulation and analysis of single molecules or chemical reactions including analyses such as Gaussian, QSAR, Docking, transitional and conformational, and experimental and theoretical estimation of spectral properties with emphasis on biomolecules and nanoparticles/nanomaterials.
- Expertise in specialized hardware for computational chemistry and molecular modeling.
- 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 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, 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 is desirable.
- 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., experience, publications, relevant awards, narrative of particular achievements or contributions to science) to Dr. Guillermo Angeles, Secretario Académico at [secretaria.academica@inecol.mx](mailto:secretaria.academica@inecol.mx) always cc'ing [maluja.dirgral@inecol.mx](mailto:maluja.dirgral@inecol.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. Information about salaries and benefits will be provided by Dr. Angeles upon request. **The job offer will be open until the proper candidate has been selected and all applicants will be informed on a timely basis if they were not selected.**

## **RESEARCH TECHNICIAN ASSIGNED TO THE BIORATIONAL MANAGEMENT OF PEST AND VECTORS NETWORK**

**Position Title:** Technician.

**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 Institute of Ecology, A.C. (INECOL) is a Public Research Center of the National Council for Science and Technology (CONACYT) that conducts research and training of students in the fields of ecology, biodiversity and systematics, conservation and natural resource management including insect pests, diseases and vectors. It has facilities in Xalapa, Veracruz and in Patzcuaro, Michoacan, as well as field stations in temperate zones and desert areas of Durango and the coastal area of Veracruz. There are currently 105 researchers, 94 academic technicians, 88 administrative and 130 graduate students associated with INECOL. INECOL's academic life is organized into nine departments or networks: Biodiversity and Systematics, Functional Ecology, Environment and Sustainability, Evolutionary Biology, Biorational Management of Pest and Vectors, Biotechnology Resource Management, Ecoethology, Biology and Conservation of Vertebrates, Multitrophic Interactions and Advanced Molecular Studies. INECOL invites interested people to occupy the position that is described below.

### **Overall Job Description:**

The successful candidate will be part of the Biorational Management of Pest and Vector Research Network. It is expected that the selected person to fill the available position, contributes significantly to the logistical support, design and implementation of experiments in the field of behavior, ecology, chemical ecology and biology of fruit flies (Diptera; Tephritidae). The successful candidate will join a working group comprised of a research leader, two academic technicians and several technicians hired with grant money. The applicant must have extensive knowledge in design, execution and statistical analyses of laboratory and field experiments. Therefore, a strong background in parametric as well as non-parametric statistics is expected. The hired person must be willing to work in the field collecting fruit and insects, and must also have experience running analytical equipment, particularly in the areas of chemical ecology and molecular biology. Proven experience will be critical during the selection process. Creative ability to innovate and solve problems or developing experimental prototypes is highly desirable. Finally, there are two critical abilities that will have important weight during the selection process: proven command of the English language, both oral and written (letters of recommendation should play emphasis on this) and true leadership ability. The person hired will coordinate research teams, interact with students and various Mexican and foreign scientists, so a warm demeanor, calm attitude towards problems, and an exceptional ability to communicate effectively and assertively in both Spanish and English, will be critical.

## **Responsibilities:**

- Be the right hand of the research leader.
- Assist on a daily basis the research activities of the research leader coordinating and running experiments, coordinating insect rearing and field collecting.
- Collaborate in the analyses of scientific data and its interpretation.
- Actively participate in the publication of scientific publications in internationally recognized journals with impact factor, in national journals, general public science journals and newspapers and occasionally in books or book chapters.
- Assist in the implementation of continuous improvement systems for the proper running of the research laboratories and constantly adopt the most state-of-the-art techniques.
- Be responsible for the proper functioning of the laboratories and their equipment and coordinate or operate the purchase of supplies and equipment.
- Develop electronic databases for subsequent statistical analyses.
- Assist the research leader in supervising undergraduate and graduate students and collaborate effectively with postdoctoral research fellows.
- Assist the research leader in organizing scientific meetings, symposia and workshops.
- Assist the research leader in coordinating visits by visiting scientists or be able to visit the laboratories of cooperating scientists to expedite progress of collaborative projects.

## **Requirements:**

- Bachelor's degree in Biology, Ecology or equivalent Major.
- Postgraduate studies up to the level of a Masters are required. PhD not required but if the successful candidate obtained one, it must be clear that the job will not lead to an independent career in science.
- Experience in laboratory techniques for gathering data on plant/fruit chemicals and/or in the fields of nutritional ecology and molecular biology.
- Ample experience conducting experiments/studies on the behavior of insects.
- Related to the above, experience in electroantennography (also electrotarsograms), extraction of volatile compounds, gas chromatography coupled to mass spectrometry or electroantennography, behavioral assays in wind tunnels or olfactometers, and related techniques.
- Having participated in research projects with fruit flies and their parasitoids is highly desirable but not obligatory as long as the person has ample experience working with insects.
- Experience in field work, both of observational and experimental nature.
- Experience as research technician or collaborator in research projects.
- Authorship in research articles is highly desirable.
- Full command of Spanish and English, both oral and written. The person must prove an ability to write scientific texts and collaborate with the research leader/lead scientist in writing scientific publications.
- Knowledge of English must be certified by TOEFL or an equivalent test (for non-English-

speaking nationals) but will be rigorously tested during the final interview process.

- Ample command over non parametric and parametric statistics and related software/programs.
- Experience handling administrative processes, and being a systematic, ordered and highly responsible person.
- Capacity for constructing and amiably working in teams, ability to negotiate, ability to solve conflicts between team members should they arise.
- Ability to quickly solve crises by communicating effectively and assertively.
- Related to the above, have a friendly personality, respect rules, and act with generosity.
- Capacity to properly handle stress and be able to juggle multitasking situations.
- Willingness to travel and working out of regular hours including occasional weekends.
- Be in possession of a valid driving license and have proven experience driving cars/trucks both in the city as well as in the field.
- Openness to learn on a constant basis and be innovative.

### **Application procedure:**

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., experience, publications, relevant awards, narrative of particular achievements or contributions to science) to Dr. Guillermo Angeles, Secretario Académico at [secretaria.academica@inecol.mx](mailto:secretaria.academica@inecol.mx) always cc'ing [maluja.dirgral@inecol.mx](mailto:maluja.dirgral@inecol.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. Information about salaries and benefits will be provided by Dr. Angeles upon request. **The job offer will be open until the proper candidate has been selected and all applicants will be informed on a timely basis if they were not selected.**

## **RESEARCH TECHNICIAN IN PROTEOMICS**

**Position Title:** Technician.

**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:**

We are requesting applicants with expertise in mass spectrometry-based proteomics and related technologies to study the interrelation between protein post-translational modifications, functional protein complexes and/or protein networks and the control of gene expression and signaling that define cell function and disease mechanisms. The selected candidate will be part of a team working on complex agricultural and ecological problems of major importance for Mexico. One of the aims of the research team is to define molecular mechanisms associated with pest and disease resistance of fruit trees of major importance for Mexico, particularly emerging problems or those causing severe negative effects on productivity. The successful candidate will join BioMimic<sup>®</sup>, a multidisciplinary team working on the protection of Mexican biodiversity, will interact with a team of specialists on genomics, molecular biology, and bioinformatics. BioMimic<sup>®</sup> provides access to state of the art mass-spectrometry equipment and other proteomics-related equipment, as well as bioinformatics facilities. Strong knowledge of proteomics 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:**

- Participate in cutting-edge research by operating mass spectrometry equipment, preferentially MALDI-TOF, LC-MS-QTOF and related technologies/techniques for proteomics applications.
- Perform separation and purification of proteins using techniques such as SDS-PAGE (one and two dimensional), Gel Permeation Chromatography among others.
- The candidate will collaborate extensively with other researchers of the BioMimic<sup>®</sup> Cluster.
- Be responsible for the operation and maintenance of mass spectrometry equipment.
- Help generate research at the cutting edge of knowledge.
- Actively participate in a multidisciplinary 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, CIAD, IPICYT, LANGE BIO and CINVESTAV Irapuato.
- Analyze data and interpret 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.
- 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:**

- Bachelors or higher degree in Biochemistry, Chemistry, Molecular Biology, Genetics or Genomics.
- Experience of proteomic techniques, preferable on mass spectrometry.
- Knowledge of bioinformatics tools necessary for analysis of proteomics 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.
- 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 track record of interacting creatively, collaboratively and productively with other scientists is a high plus.
- 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., experience, publications, relevant awards, narrative of particular achievements or contributions to science) to Dr. Guillermo Angeles, Secretario Académico at [secretaria.academica@inecol.mx](mailto:secretaria.academica@inecol.mx) always cc'ing [maluja.dirgral@inecol.mx](mailto:maluja.dirgral@inecol.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. Information about salaries and benefits will be provided by Dr. Angeles upon request. **The job offer will be open until the proper candidate has been selected and all applicants will be informed on a timely basis if they were not selected.**



## RESEARCH TECHNICIAN IN TRANSMISSION ELECTRON MICROSCOPY

### ONE POSITION IS AVAILABLE

**Position Title:** Technician.

**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 TEM-generated images. These studies will support the work of researchers in organic chemistry, plant secondary compounds, microbiology and nanotechnology that form part of the BioMimic® Cluster. As such, the candidate will require a meticulous and laborious approach to sample preparation and analysis, will be working on the identification of compounds present in ceramics, minerals, polymers and other natural and synthetic materials.

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 TEM studies. The successful candidate will undergo training in advanced TEM techniques.

### **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 TEM 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, IPICT, CIAD, LANGE BIO and CINVESTAV Irapuato.
- Provide technical support for the development of graduate student projects.
- Supervise undergraduate student projects.

- Collaborate in writing 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, biology, physics or a related discipline and preferentially a Master's degree in optoelectronics, materials science, chemistry, geology, biological sciences or related disciplines.
- Experience in the preparation, handling and imaging of TEM samples is necessary as is experience of standard techniques in microscopy and TEM, preferentially in the area of biology.
- 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.

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., experience, publications, relevant awards, narrative of particular achievements or contributions to science) to Dr. Guillermo Angeles, Secretario Académico at [secretaria.academica@inecol.mx](mailto:secretaria.academica@inecol.mx) always cc'ing [maluja.dirgral@inecol.mx](mailto:maluja.dirgral@inecol.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. Information about salaries and benefits will be provided

by Dr. Angeles upon request. **The job offer will be open until the proper candidate has been selected and all applicants will be informed on a timely basis if they were not selected.**