

Postdoctoral Associate Position at Yale University

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Human Nature Lab

Yale Institute for Network Science

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Our Human Nature Lab has a postdoctoral position opening for a candidate with a background in chromatography and mass spectrometry (especially GCMS) to join research efforts of a multidisciplinary team. The primary responsibilities will be characterization of human biomarkers using GC-MS/MS to understand the biology of social behavior.

The Human Nature Lab (<https://humannaturelab.net>) is investigating the biological basis of human social interactions by bringing together approaches such as field and laboratory behavioral experiments, genomic sequencing and mass spectrometry, and computational models of networks. This position offers an opportunity to work with human samples to identify volatile organic compounds (VOCs) and metabolites that may characterize social behavior in lab experiments, may relate to the microbiome in field specimens, and may help explain the structure of social networks in real-life settings (such as our large-scale public health intervention to reduce infant and maternal mortality in Honduras). The candidate will work with scientists across a wide range of disciplines, ranging from network science to artificial intelligence to microbial metagenomics.

Responsibilities:

The successful candidate will:

- Perform GCMS characterization of human VOCs, steroid hormones, microbiome metabolites, and other biological markers, including extraction and purification.
- Follow established protocols for human biomarker GCMS profiling in a variety of sample matrices, as well as develop and validate new protocols and procedures.
- Conduct both untargeted and targeted GCMS studies, applying both qualitative and quantitative analysis, for the purposes of fingerprinting the human volatolome and identifying specific chemical messengers associated with cooperative behavior and interpersonal connection. This is part of an unprecedented project to discover and characterize human social chemosignalling as it relates to human social networks.
- Use GCMS to profile the human gut microbiome metabolome, contributing to a study of social networks and the human microbiome. This is a first-of-its-kind, large-scale study that includes to-date the largest map of face-to-face social networks and the largest metagenomic microbiome study in a single population, followed longitudinally with rich phenotyping.

- Apply appropriate statistical analysis methods for GCMS data, summarize and present results, lead publication of manuscripts.
- Collaborate with other members of the Human Nature Lab and the Yale Institute for Network Science, as well as our lab's collaborators at other universities, to advance the existing projects and expand the research agenda in new directions.
- Actively participate in mentoring PhD candidates in the lab, and supervise research assistants.
- Work effectively with the project management team, data scientists, and developers.
- Follow established laboratory safety procedures, adhere to the lab's data security protocols, and help enforce ethical responsibilities regarding privacy and wellbeing of human subjects.

Job Requirements:

- PhD in biochemistry, chemistry, engineering, biomedical sciences, or related or appropriate fields.
- Demonstrated expertise in GCMS techniques.
- Experience in GCMS data analysis/interpretation.
- Ability to lead independent research, as well as to collaborate in small and large team settings.
- Willingness to learn about new topics and new methods from a variety of intersecting disciplines.
- Positive attitude and ability to contribute to our open and happy lab culture.

Ideal candidates will have demonstrated a passion for science, some record of productivity/publication, and strong motivation for problem-solving and innovation. We like candidates with risky and quirky ideas.

The lab PI and the Co-Director of the Yale Institute for Network Science (where the lab is located) is Nicholas A. Christakis, the Sterling Professor of Social and Natural Science at Yale, and Professor in the departments of Sociology, Medicine, Ecology and Evolutionary Biology, Biomedical Engineering, and Statistics and Data Science. The postdoc position will benefit from, and allow for active engagement in, activities in these various departments, as well as in the multidisciplinary Yale Institute for Network Science within the School of Engineering and Applied Science. The postdoc will also benefit from working in a lab whose work is funded by grants from the NIH, DARPA, the Bill and Melinda Gates Foundation, the NOMIS Foundation, the Templeton Foundation, the RWJ Foundation, the Tata-Yale Alliance, and others.

Required application materials:

Send your cover letter with an attached CV to thomas.keegan@yale.edu.