

October 2018

**MEMORANDUM**

TO: Undergraduate Chemistry/Biochemistry Majors

FROM: James Goodrich, Chair  
Department of Biochemistry

SUBJECT: CHEM 4901 (Independent Study) - Fall 2018/Spring 2019

Faculty listed in this memorandum are interested in having undergraduates undertake independent research in their groups for the Fall 2018/Spring 2019 academic year. A brief description of their research is included, but a more elaborate description of the research activities for each can be seen on the departmental Web page:

**<https://www.colorado.edu/biochemistry>**

Go to the “Faculty” tab, then click on “Faculty A-Z” in the drop-down menu. Clicking on the name of a faculty member will give you an extended summary of that individual’s research interests. Please note that the appearance of the name of a faculty member on the list below is no guarantee that he/she has a space available for you at a particular time. Conversely, faculty members who are not listed occasionally accept undergraduates in their research groups. In general, faculty members are usually willing to discuss the nature of their research with interested individuals.

I will be happy to discuss general issues regarding undergraduate research with you, but I cannot help you find a place in a research group. It is your responsibility to talk with one or more faculty members and find a lab and a project which interests you.

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| Robert Batey<br>JSCBB B314, (303)735-2157<br>Email: robert.batey@colorado.edu                    | Design and evolution of RNA biosensors; in vitro evolution of novel RNA genetic regulators, applied biology for creating of novel enzymes; mechanisms of genetic regulation by RNA in bacteria; atomic-level determination of RNA structure; RNA structure and function | Desired Qualifications: 3.2 or higher GPA; CHEM 1113/1114, or 1251; minimum time commitment of 12 hours per week for at least 4 semesters; prefer students interested in pursuing an honors thesis<br>Interested students should submit vita; unofficial transcript  |
| Jeffrey C. Cameron<br>JSCBB B221/SEEC N374, (303)492-9312<br>Email: jeffrey.cameron@colorado.edu | Spatiotemporal dynamics of metabolism in single bacterial cells over multigenerational lineages. Quantitative imaging, biophysics, synthetic biology, mechanobiology, biomaterials, biominerals, photosynthesis, CO <sub>2</sub> -fixation, biofuels, and more...       | Desired Qualifications: 3.0 or higher GPA; minimum time commitment of 12 hours per week for at least 2 semesters<br>Interested students should submit: <1pg cover letter/statement of purpose, vitae<br>Additional Information: Interview required   |
| Joseph J. Falke<br>JSCBB B218, (303)492-3503<br>Email: joseph.falke@colorado.edu                 | Biochemical and biophysical studies of sensory receptors and signaling proteins; protein engineering; protein chemistry; spectroscopy   | Desired Qualifications: 3.5 or higher GPA, willingness to complete an Honors Thesis, and availability to work at least 12 hours/week and one full summer (paid).<br>Interested Students should submit (via email): vita; unofficial transcripts; and references (preferably at least two instructors in recent chemistry, biochemistry courses). |
| Jim Goodrich<br>JSCBB B321, (303)492-3273<br>Email: james.goodrich@colorado.edu                  | Gene expression, mammalian transcriptional regulation, functional RNAs  | Desired Qualifications: 3.5 or higher GPA, interest in completing an honors thesis. Minimum time commitment of at least 12 hours per week for at least 3 semesters.<br>Interested students should submit vita and unofficial transcripts   |
| Robert D. Kuchta<br>JSCBB C222, (303)492-7027<br>Email: robert.kuchta@colorado.edu               | Inhibition of DNA replication; mechanisms of proteins involved in replication; synthesis of novel nucleotide analogs  |  |
| Jennifer Kugel<br>JSCBB B320, (303)492-3596<br>Email: jennifer.kugel@colorado.edu                | Mechanisms of transcriptional regulation in mammalian systems   | Desired Qualifications: 3.2 or higher GPA; minimum commitment of 3 semesters or 2 semesters and a summer.<br>Interested students should submit: unofficial transcript; vita; a brief statement of why they are interested in research  |
| Xuedong Liu<br>JSCBB C318, (303)735-6161<br>Email: liux@colorado.edu                             | TGF-beta signaling transduction mechanism and retroviral mediated expression cloning  |  |

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| Karolin Luger<br>JSCBB A223, (303)735-6689<br>Email: karolin.luger@colorado.edu   | Chromatin structure and function; transcription, replication, DNA repair in a chromatin context; structural biology and biophysics of nucleosomes and associated protein factors; Cryo-EM, crystallography, atomic force microscopy, fluorescence spectroscopy, live-cell imaging; functional assays   | Desired qualifications: 3.2 or higher GPA, minimum time commitment of 12 hours per week for at least two semesters. Interested students should submit: vita, references   |
| Amy Palmer<br>JSCBB C317, (303)492-1945<br>Email: amy.palmer@colorado.edu         | Protein design and evolution to create fluorescent biosensors; biophysical characterization of biosensors; use of sensors for live cell imaging of signal transduction; investigation into cellular mechanism of disease   | Desired Qualifications: 3.0 or higher GPA; minimum time commitment of 12 hours per week for at least 2 semesters<br>Interested students should submit: vita; references<br>Additional Information: prefers interested students to contact her in their sophomore or junior year, requires interview |
| Roy Parker<br>JSCBB B414, (303)735-7780<br>Email: roy.parker@colorado.edu         | Analysis of RNP granule assembly in cells and in vitro.<br>Single molecule imaging.  | Desired Qualifications: 3.2 or higher GPA; minimum time commitment of 12 hours per week for at least 4 semesters; prefer students interested in pursuing an honors thesis<br>Interested students should submit vita; unofficial transcript  |
| Marcelo Sousa<br>JSCBB A417, (303)735-4341<br>Email: marcelo.sousa@colorado.edu   | Definition and characterization of novel antibiotic targets. Study of human pathogen proteins that confer antibiotic resistance. Molecular mechanisms of proteins regulated by conformational changes.   | Desired qualifications: GPA 3.2 or higher. Strong interest in developing an independent project to complete an honors thesis. Interested Students should submit: transcript and request an interview.<br>Additional Information: Requires interview   |
| Dylan Taatjes<br>JSCBB B319, (303)492-6929<br>Email: taatjes@colorado.edu         | Biochemical, biophysical, and cell-based methods used to study the basic mechanisms of transcription regulation in human cells. Our research has direct implications for human development and disease. Common methods we employ include in vitro enzymatic assays, protein purification, CRISPR-Cas9 genome editing, molecular cloning, sequencing and computational biology. | Desired qualifications: GPA 3.0 or higher. Strong interest in developing an independent project after initial training. Interested Students should submit: transcript and request an interview.<br>Additional Information: Requires interview   |
| Deborah Wuttke<br>JSCBB B222, (303)492-4576<br>Email: deborah.wuttke@colorado.edu | Structural and biochemical studies of telomere proteins; single-stranded DNA recognition; structural biology (X-ray and NMR); ncRNAs   | Desired Qualifications: 3.3 or higher GPA; minimum 3 credit hours per semester for at least 2 semesters plus a summer<br>Interested students should submit: vita; unofficial transcript   |