

Graduate Student Research Position in Goyal Lab

UNIVERSITY of CALIFORNIA | MERCED

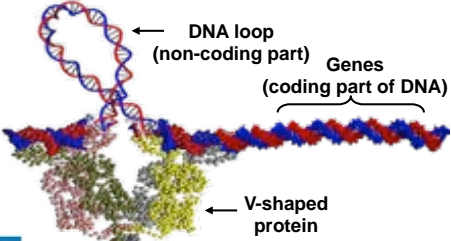
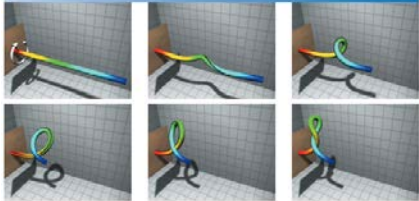
- Are you interested in applying your expertise in **Mechanics** to model and simulate biological systems at microscopic scale?
- Are you interested in the fields of **Mechanics, Dynamics or Controls** and excited about doing an interdisciplinary research?

If so, we are looking for smart and motivated students like you. To give you a flavor of research in our lab, here is an example project:

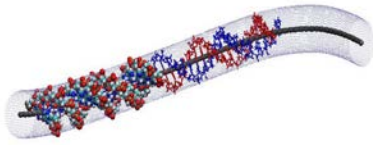
DNA “stressed out” to work!

- Looping of DNA is crucial to gene expression.
- We employ continuum rod model to simulate looping.
- A research challenge is to estimate the constitutive law from its discrete structure or MD simulations.

A continuum mechanics based simulation of torsional buckling of rod:



Continuum rod model of DNA:



This project, on one hand, necessitates in-depth fundamental research in nonlinear continuum dynamics, mathematical modeling, and scientific computing, while on the other hand, it also necessitates learning interdisciplinary skills such as Molecular Dynamics (MD) simulations and collaborations with single-molecule experimentalists.

Whether you are interested in the above research or simply interested in the fields of Mechanics, Dynamics or Controls, to explore further, send an email to **Prof. Goyal** at sgoyal2@ucmerced.edu **with your curriculum vitae and a short description of research interests**. Final selection will be through the graduate application process of the School of Engineering at the University of California, Merced. For application requirements, refer to <http://graduatedivision.ucmerced.edu/>, and for more information regarding our graduate program, contact the Graduate Program Coordinator, Ms. Tomiko Hale at thale2@ucmerced.edu.

Strong Preference will be given to students with:

- Undergraduate or masters degree in Mechanical Engineering, Physics, Applied Mechanics or Applied Mathematics
- Excellent mathematical background and aptitude
- Excellent interdisciplinary communication, technical writing and presentation skills
- Knack to learn software tools and computational programming skills



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