

Christine Roche

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Graduate Institution: University of California – Berkeley

Location: Berkeley, California

Graduate Discipline: Chemical Engineering

Hometown: Brecksville, Ohio

Research Interests:

*Biofuels derived from lignocellulosic feedstocks offer a promising intermediate-term solution to the transportation fuel problem as they are clean, renewable domestic sources of energy that will benefit our society environmentally, economically, and provide energy security. Currently the enzyme cost contribution to bioethanol production from cellulosic biomass is a significant limiting factor to producing a cost-competitive fuel. Reductions in this cost can be accomplished by developing a more efficient enzyme system or enzyme production system. Filamentous fungi have a great capacity to produce large amounts of proteins and this quality has been exploited by industry to produce specific proteins in quantities exceeding 30 g/L. However, these high yields are seen with homologous protein production. My research is first focused on improving recombinant and heterologous cellulase production in the filamentous fungus, *Neurospora crassa*. With an improved *N. crassa* cellulase expression system, I would like to engineer a system of cellulases in parallel and evaluate synergies among those enzymes.*

About me:

Between my undergraduate and graduate studies I worked for two years at the National Renewable Energy Laboratory as a Biochemical Engineer in the Bioprocess Research and Development group. At NREL I focused on improving the enzymatic saccharification process of converting chemically pretreated lignocellulosic biomass to ethanol. To improve process economics, I worked on developing an enzymatic saccharification reactor system for high-solids biomass concentrations through the study of physical properties and rheology of biomass hydrolysis slurry. Though my tenure at NREL was enjoyable and rewarding, to enter into the research specialty and path that I desire I decided to return to graduate studies. In addition to pursuing a graduate degree at UC Berkeley, I am also a member of professional associations such as AIChE, SBE, ACS and SIM. After concluding my graduate studies I would like to return to work at a national laboratory or, possibly, industry.

When I am not working in lab, I enjoy working out (cycling; running), spending time outdoors (hiking; visiting national parks; rock climbing), spending time with friends (cooking out), and relaxing (crocheting; reading; watching TV).



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