Breaking down lignose - Gregg Beckham
depolymerize lignin in an integrated biorefinery context and subsequently upgrade lignin-derived aromatics into value-added chemicals to realize a more holistic, integrated approach to biomass conversion
biological upgrading of sugars
bench-scale catalytic and separations processes
enzymatic processes for both deconstructing cellulose and also assembling it
use of novel metabolic enzymes for biologically producing fuel precursors
begin a working group to figure out ways to incorporate concepts of the Circular Materials Economy into the designs of everything from coffee mug lids to wind turbines, cutting down on waste generated by todayâĂŹs linear economy model.

National Bioenergy Center August 7, 2018
National Renewable Energy Laboratory
15013 Denver West Parkway, Golden, CO 80401

Dear Dr. Gregg Beckham,

Just like yourself I don't wish to see the natural world being degraded beyond repair and am fed up with being a contributor or at least a bystander in this destruction. It is my abiding desire to be part of the solution and contribute to your efforts in providing a holistic, integrated approach to biomass conversion and in finding ways to integrate concepts of Circular Materials Economy into the designs of everything . Having focused on algae and cyanobacteria during my B.Sc. and M.Sc. theses, having participated in the iGEM (international Genetically Engineered Machine) competition and having worked for Europe's flagship laboratory for the life sciences in Rome, I bring the neccessary background knowledge and the enthusiasm, strong work ethic and eagerness to learn to make up for any deficiency.

During my bachelor thesis I gained insight into the cultivation of *N. oceanica* and *P. tricornutum* and during my master thesis I successfully cultivated and processed Synechocystis sp. PCC 6803 *(Publication)*. These experiences have left me well prepared to work preparing and cultivating both algae and cyanobacteria. In addition, the wide array of lectures and courses I took in biochemistry, translational biology and microbiology has left me with a solid foundation to learn and develop new procedures and protocols in the lab. As an example, during a reorganization of my current lab, I consulted relevant literature to establish standard protocols for the production and quantification of viral vector tools in mammalian cell culture. Due to the reshaping I also started working in a BSL2 environment and am aware of the importance of stringently following safety guidelines and maintaining a safe working environment. Our facility currently only consists of my supervisor and me, meaning I not only produce high-quality viral vectors and genetic constructs independently, but also maintain a functional laboratory and took the initiative to improve the facility's database (FileMaker)—leaving me with excellent organizational skills I will invest to ensure accurate data recording and storage at the NBC. I have also attended a professional course on presenting with impact and project management for scientists and am able to apply these techniques to balance multiple projects—currently more than 12 at once—while managing my time to deliver final products as quickly as possible.

For the iGEM competition I participated in an interdisciplinary team of 20 highly motivated students. Within a month we agreed on an influential topic, and after only eight months of wet lab we produced high-value *data*, finally presenting our team's findings on our *website* and at an international conference. This experience has not only left me with a strong work ethic, but also with the ability to efficiently

identify the essentials from scientific findings and to present these in a comprehensive way to my team and a wider audience. During this time we successfully ran our own lab independently, including ordering reagents, communicating with companies and funding agencies for financial or material aid, making and sterilizing media and keeping the lab and our data organized.

Given my skill set I believe I could make valuable contributions to your team and it would be an honor to contribute to your research into algal biofuels. If you agree, I would appreciate the opportunity to discuss any potential position and my contributions in more detail. Thank you for your time and consideration, I look forward to hearing from you.

Sincerely,

Rabea Jesser

Note: M.Sc. Thesis, B.Sc., references and a more complete CV can also be sent upon request.