

# Stanford

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## Tim Schnabel

Ph.D. Student in Bioengineering, admitted Autumn 2015

### Bio

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#### BIO

My biggest passion is solving problems. Biotechnology is fascinating and amazingly complex; it has the power to change the world in areas such as sustainable energy, food, and medicine. Between all of these, I do not mind the exact subject so much as the process of creatively finding a solution. I look to explore and expand said creativity and problem solving skills throughout my graduate study at Stanford.

I was born in Germany and attended international schools in both Hannover, Germany, and London, England. After graduating with an IB Diploma I came to Stanford for undergraduate study in Chemical Engineering and Economics. Through an honors thesis project that covered all four years in the James R. Swartz Laboratory, I developed further depth and focus on biotechnology. I am currently enrolled as a Bioengineering student at Stanford and have worked on projects ranging from metabolic engineering of novel anti-cancer drugs to photosynthetic carbon concentration optimization to light-controlled cell division to novel HIV vaccines.

I joined the Elizabeth Sattely lab for my thesis work, and am currently engineering plant-microbe interactions. Bacteria and fungi can confer a number of beneficial properties to crops, such as improved drought tolerance and nitrogen fixation. Understanding and then engineering these mechanisms is a complex, new, and extremely hot field of research. My current project: Turbospirillum, focuses on engineering the cereal-crop-symbiotic bacterium Azospirillum brasilense (also known as the King of the Spirillums, by me) to excrete ammonia at high rates. If we are successful, then this can transform sustainable agriculture for the future.

#### HONORS AND AWARDS

- Accel Innovation Scholar, Stanford Technology Ventures Program (2018)
- Bowes Fellowship, Stanford BioX (2015)
- Firestone Honors Thesis Medal, Stanford University (2015)
- Kennedy Thesis Prize, Stanford University (2015)
- Mason Prize in Chemical Engineering, Stanford University (2015)
- Terman Engineering Academic Excellence Award, Stanford University (2015)
- President's Award for Academic Excellence, Stanford University (2012)

#### EDUCATION AND CERTIFICATIONS

- Master of Science, Stanford University , BIOE-MS (2017)
- Bachelor of Science, Stanford University , CHEME-BSH (2015)
- Bachelor of Science, Stanford University , ECON-MIN (2015)

## SERVICE, VOLUNTEER, AND COMMUNITY WORK

- VPTL Student Advisory Board (2017 - 2018)
- FAST Project Mentor (2017 - 2018)
- TBP Advisory Board Chair (2015)
- TBP President (2014 - 2015)
- GVI Biodiversity Protection (2011)

## PATENTS

- Tim Schnabel, Elizabeth S. Sattely. "United States Patent US 62/801,454 Inducible Ammonia Excretion from a Diazotroph, Methods of Creation and Uses Thereof", Stanford University, Feb 6, 2019
- Tim Schnabel, James R. Swartz. "United States Patent US 62/215,517 Oxygen Tolerant Iron-Iron Hydrogenases", Stanford University, Sep 15, 2015
- Tim Schnabel. "United States Patent ND Novel DNA Aptamer Evolution", DuPont Biosciences, Aug 20, 2014

## PERSONAL INTERESTS

Academic:

Plant-Microbe Interactions

Protein Engineering

Metabolic Engineering

Molecular and Cellular Engineering

Pathway Discovery

Device Development

Extracurricular:

Teaching

Social Dance

Piano

Composition

Spirituality

Writing

Travel (41 countries so far)

Botany

Beekeeping

Volleyball

Badminton

## LINKS

- LinkedIn Profile: <https://www.linkedin.com/in/schnabeltim>

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Engineering plant microbe interactions for improved crop properties. Focus on drought tolerance and nitrogen fixation.

Expertise: cloning, bacterial cell culture, mammalian tissue culture, plant transient gene expression, bioinformatics, GCMS/LCMS, targeted mutagenesis, random mutagenesis, protein purification, high-throughput screen development, microscopy, image analysis, microfluidic device design and fabrication, software engineering, machine learning, high-throughput data processing and visualization; proficient in R, MATLAB, Python, Java. [This is a non-exhaustive list].

## LAB AFFILIATIONS

- Elizabeth Sattely, Pathway Discovery (8/1/2016)
- Peter Kim, Virology and Immunology (5/1/2016 - - 7/31/2016)
- Martin Jonikas, Plant Biology (12/12/2015 - - 4/30/2016)
- Christina Smolke, Metabolic Engineering Laboratory (9/21/2015 - - 12/11/2015)
- James Swartz, Protein Engineering (12/1/2011 - - 6/14/2015)

## Professional

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### WORK EXPERIENCE

- Teaching Assistant: Molecular and Cellular Engineering Lab - Stanford University (2016)
- DuPont Genencor Biosciences Internship - DuPont Biosciences (Genencor) (6/1/2014 - 9/1/2014)

## Publications

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### PUBLICATIONS

- **Engineering post-translational regulation of glutamine synthetase for controllable ammonia production in the plant-symbiont *A. brasilense*.** *Applied and environmental microbiology*  
Schnabel, T., Sattely, E.  
2021
- **High-Throughput Screening of Catalytic H<sub>2</sub> Production** *Angew Chem Int Ed Engl.*  
Koo, J., Schnabel, T., Liang, S., Evitt, N. H., Swartz, J. R.  
2017; 56 (4): 1012-1016