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April 27, 2012

David Sheinberg, PhD
Search Committee Chair
Dept. of Neuroscience
Brown University
Providence, RI 02901

Dear Dr. Sheinberg,

I am writing to apply for the faculty position in computational neuroscience. Please see the attached application materials: Curriculum vitae, addresses of referees, three publications, research statement, and teaching statement.

I am currently working in the Dept. of Physiology and Biophysics at the University of Colorado Medical Campus, where I started as Assistant Professor in 2009. My main research interest is information processing in the auditory brainstem, with a tightly linked approach of *in vitro* physiology, *in vivo* physiology, and neuronal modeling. I have a strong background all methods, which I use to study information processing on diverse levels of analysis.

Thank you very much for your consideration. I look forward to hearing from you.

Yours, sincerely

Sincerely,

Achim Klug, PhD
Assistant Professor
Dept. of Physiology & Biophysics

References will be sent from the following researchers:

Prof. Benedikt Grothe
Dept. of Neurobiology
University of Munich
Grosshaderner Strasse 2
82152 Martinsried, Germany

Tel: +49-89-2180-74302
Fax: +49-89-2180-74304
E-mail: grothe @lmu.de

Prof. George Pollak
Section of Neurobiology
University of Texas at Austin
Patterson Labs, C0920
Austin, TX 78712, U.S.A.

Tel: 512-471-4352
Fax: 512-471-9651
E-mail: gpollak@mail.utexas.edu

Prof. Henrique von Gersdorff
Vollum Institute, L-474
Oregon Health & Science University
3181 SW Sam Jackson Park Road
Portland, OR 97239, U.S.A.

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April 27, 2012

Achim Klug

Curriculum Vitae

Address:

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Dept of Physiology and Biophysics
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Aurora, CO 80045
USA

Phone: +1-303-724-4621
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Web: http://neuro.achim-klug.com

Undergraduate Education:	Fall 1989 - Summer 1993	University of Würzburg, Germany Program in Biology
	Fall 1993 - Summer 1994	University of Texas at Austin, TX, USA Study Abroad Fellowship GPA 4.0
	Fall 1994 - Summer 1995	University of Würzburg - continued Program in Biology
	Summer 1995	Graduation, *Diplom* in Biology (equiv BA plus MA) GPA equiv. of 3.9
	Thesis:	The Effects of Glycinergic Inhibition on Binaural and Monaural Properties of Neurons in the Inferior Colliculus.
Graduate Education:	Fall 1995 - Fall 2000:	University of Texas at Austin, TX, USA Doctoral Program in Zoology / Neurobiology
	Supervising professor:	Prof. George Pollak
	Fall 2000:	Graduation, PhD in Zoology / Neurobiology, GPA 3.96; Bio-GRE 99 percentile
	Dissertation:	The Response of Inferior Colliculus Neurons in the Mexican Free-tailed Bat to Species-Specific Calls. Nomination for “Best Dissertation of the Academic Year 2000/2001”.
Post-Doctoral Fellow:	Winter 2000 - Winter 2003	Oregon Health & Science University, Portland, OR, USA Prof. Larry Trussell
Junior Group Leader:	Spring 2004 - Spring 2009	Ludwig-Maximilians University Munich
Assistant Professor:	Spring 2009 - today	University of Colorado at Denver

Summer Courses:	Summer 1995	Neurobiology of Animal Behavior, Shoals Marine Lab, Cornell University.
	Summer 1998	Neural Systems and Behavior, Marine Biological Laboratory, Woods Hole.
	Summer 2000	Physiological Approaches to Ion Channel Biology Cold Spring Harbor Laboratory, Cold Spring Harbor.
	Summer 2001	Teaching Assistant for Physiological Approaches to Ion Channel Biology Cold Spring Harbor Laboratory, Cold Spring Harbor.
Other Qualifications:	1991-1995	Courses in journalism (print, radio, TV) with the Hanns-Seidel Foundation Munich.
	1992-1995	Graphic designer at *Trend* City Magazine Wuerzburg, responsible for design, page layout and production of sections of the magazine, as well as production of the magazine's commercial print advertisements.
Awards & Fellowships: (selected from 13 awards)	February 1990	Oscar-Karl-Forster Fellowship, University of Würzburg. (financial award for educational materials)
	March 1990 - March 1995	Hanns-Seidel-Foundation Fellowship, Munich. (full scholarship providing total cost of education & salary for duration of undergraduate studies)
	July 1993 - June 1994	Study Abroad Fellowship, University of Würzburg. (provided tuition for studying at the University of Texas)
	July 1995	Grass Foundation Fellowship, Cornell University. (provided tuition for summer course at Cornell´s "Shoals Marine Laboratory")
	Fall 1997 - Spring 1998	David Bruton Jr. Fellowship, University of Texas. (provided stipend and tuition for academic year 1997/1998)
	Summer 1998	Herbert W. Rand Fellowship, Marine Biological Laboratory, Woods Hole. (provided tuition for MBL's "Neural Systems and Behavior" Course)
	Summer 1998	Society for General Physiologists, (award in recognition of outstanding academic performance during MBL's "Neural Systems and Behavior" Course)
	Fall 1999 - Spring 2000	University Tuition Award, University of Texas. (provided tuition for academic year 1999/2000)
Research Support:	2004	Münchner Universitätsgesellschaft e.V. (equipment grant). Role: PI.
	2005 - 2007	Research Grant (Sachbeihilfe KL1842/1-1), German Research Council (DFG) (salaries, equipment, supplies). Role: PI.
	2007 - 2008	Research Grant (Sachbeihilfe KL1842/1-2), German Research Council (DFG) (salaries, equipment, supplies). Role: PI

2011-2016	R01 DC 11582 NIH - NIDCD Role: PI
2012-2013	Team Award Center for NeuroScience, University of Colorado Role: Co-PI (with Dr. Herman Jenkins, MD)
Pending	R21 DC 011906 NIH/NIDCD Role: Co-PI (with Dr. Gidon Felsen, PhD) Status: Study section review on pending. First submission in 2011, percentile = 15.

Publications:

A. Klug, T.J. Park, and G.D. Pollak: Glycine and GABA Influence Binaural Processing in the Inferior Colliculus of the Mustache Bat.
Journal of Neurophysiology 74: 1701-1713, 1995.

T.J. Park, **A. Klug**, J.P. Oswald, and B. Grothe: A Novel Circuit in the Bat's Midbrain Recruits Neurons into Sound Localization Processing.
Naturwissenschaften 85: 176-179, 1998.

J.P. Oswald, **A. Klug**, and T.J. Park: Interaural Intensity Difference Processing in Auditory Midbrain Neurons: Effects of a Transient Early Inhibitory Input.
Journal of Neuroscience 19: 1149-1163, 1999.

A. Klug, E.E. Bauer, and G.D. Pollak: Multiple Components of Ipsilaterally Evoked Inhibition in the Inferior Colliculus.
Journal of Neurophysiology 82: 593-610, 1999.

E.E. Bauer, **A. Klug**, and G.D. Pollak: Features of Contralaterally Evoked Inhibition in the Inferior Colliculus.
Hearing Research 141: 80-96, 2000.

A. Klug, A. Khan, R.M. Burger, E.E. Bauer, L.M. Hurley, L. Yang, B. Grothe, M.B. Halvorsen, and T.J. Park: Latency as a Function of Intensity in Auditory Neurons: Influences of Central Processing.
Hearing Research 148: 107-123, 2000.

G.D. Pollak, R.M. Burger, T.J. Park, **A. Klug**, and E.E. Bauer: Roles of inhibition for transforming binaural properties in the brainstem auditory system.
Hearing Research 168: 60-78, 2002.

A. Klug, E.E. Bauer, J.T. Hanson, L. Hurley, J. Meitzen, and G.D. Pollak: Response Selectivity for Species-Specific Calls in the Inferior Colliculus of Mexican Free-Tailed Bats is Generated by Inhibition.
Journal of Neurophysiology 88: 1941-1954, 2002.

E.E. Bauer, **A. Klug**, and G.D. Pollak: Spectral Determination of Responses to Species-Specific Calls in the Dorsal Nucleus of the Lateral Lemniscus.
Journal of Neurophysiology 88: 1955-1967, 2002.

G.D. Pollak, R.M. Burger, and **A. Klug**: Dissecting the circuitry of the auditory system.
Trends in Neurosciences 26: 33-39, 2003.

G.D. Pollak, **A. Klug**, and E.E. Bauer: Processing and Representation of Species-Specific Communication Calls in the Auditory System of Bats.
International Review of Neurobiology 56: 83-121, 2003.

T.J. Park, **A. Klug**, M. Holinstat, and B. Grothe: Interaural Level Difference Processing in the Lateral Superior Olive and the Inferior Colliculus.
Journal of Neurophysiology 92: 289-301, 2004.

Publications (cont.)

A. Klug, E. E. Bauer, J. T. Hanson, and G. D. Pollak: Processing of species specific vocalizations in the auditory brainstem and midbrain of Mexican free tailed bats *(Tadarida brasiliensis)*. In: J.S. Kanwal and G. Ehret, (eds.): *Behavior and Neurodynamics for Auditory Communication*, pp 132-155. Cambridge University Press, Cambridge, England, 2006.

A. Klug and L.O. Trussell: Activation and deactivation of voltage-dependent K+ channels during synaptically-driven action potentials in the MNTB.
Journal of Neurophysiology 96: 1547-1555, 2006.

M. Pecka, T.P. Zahn, B. Saunier-Rebori, I. Siveke, F. Felmy, L. Wiegrebe, **A. Klug**, G.D. Pollak, and B. Grothe: Inhibiting the Inhibition: A Neuronal Network for Sound Localization in Reverberant Environments.
Journal of Neuroscience 27: 1782-1790, 2007.

J. Hermann, M. Pecka, H. von Gersdorff, B. Grothe, and **A. Klug**:
Synaptic Transmission at the Calyx of Held Under In Vivo-Like Activity Levels.
Journal of Neurophysiology 98: 807-820, 2007.
See also associated "Editorial Focus" by nobel laureate E. Neher:
Short-Term Plasticity Turns Plastic.
Journal of Neurophysiology 98: 577-578, 2007.

J. Hermann, B. Grothe, and **A. Klug**:
Modeling Short-Term Synaptic Plasticity at the Calyx of Held Using
In Vivo-Like Stimulation Patterns.
Journal of Neurophysiology 101: 20-30, 2009.

M. Ford, B. Grothe, and **A. Klug**:
Fenestration of the Calyx of Held Occurs Sequentially Along the Tonotopic Axis, Is Influenced by Afferent Activity, and Facilitates Glutamate Clearance.
Journal of Comparative Neurology 514: 92-106, 2009.

A. Klug and B. Grothe: Ethological Stimuli. In: Palmer and Rees:
The Oxford Handbook of Auditory Science: The Auditory Brain, pp 173-192. Oxford University Press, England, 2010.
The handbook received the George Davey Howells Prize 2010 from London University and the Royal Society of Medicine for "Most distinguished published contribution to the advancement of Otolaryngology".

J. Enes, N. Langwieser, J. Ruschel, M.M. Carballosa-Gonzalez, **A. Klug**, M.H. Traut, B. Ylera, S. Tahirovic, F. Hofmann, V. Stein, S. Moosmang, I.D. Hentall, and F. Bradke:
Electrical Activity Suppresses Axon Growth through Cav1.2 Channels in
Adult Primary Sonsory Neurons.
Current Biology 20: 1154-1164, 2010.

A. Klug:
Short-term plasticity in the auditory brain stem by using in-vivo-like stimulation parameters.
Hearing Research 279: 51-59, 2011

M.J. Fischl, T.D. Combs, **A. Klug**, B. Grothe, and R.M. Burger:
Modulation of synaptic input by GABAB receptors improves coincidence detection for computation of sound location.
Journal of Physiology, published online, 10.1113/jphysiol.2011.226233, 2012.

Invited Seminars:

GABA and glycine shape the binaural response properties of inferior colliculus neurons. Departmental Seminar, Department of Zoology, University of Leipzig. Leipzig, Germany, 1995.

A method to pharmacologically dissect and characterize inhibitory inputs into inferior colliculus neurons. Invited Conference Presentation,
International Workshop on Binaural Processing in the Superior Olivary Complex.
Nye, Montana, 1996

Invited Seminars (cont.):

Characterization of long-lasting inhibition in inferior colliculus neurons. Departmental Seminar, Department of Biological Sciences, University of Illinois. Chicago, Illinois, 1997.

Approaches to understanding the processing of complex signals in the auditory midbrain. Invited Conference Presentation, International Workshop on Auditory Processing.
Cody, Wyoming, 2000.

Processing of Echolocation and Non-Echolocation Signals in the Bat Inferior Colliculus. Invited Conference Presentation, 6th International Congress of Neuroethology. Bonn, Germany, 2001.

Processing of species-specific sounds in the auditory midbrain.
Invited Conference Presentation, XXVII International Ethological Conference.
Tuebingen, Germany, 2001.

The influence of '*in vivo*' spontaneous rates on short term plasticity in the Calyx of Held synapse. Invited Conference Presentation, Symposium 'The Calyx of Held'.
Leipzig, Germany, 2005.

In vivo spontaneous activity induces profound changes in high-fidelity synaptic transmission at the Calyx of Held. Invited Conference Presentation, Calyx Symposium.
Leipzig, Germany, 2006.

Synaptic transmission at the Calyx of Held under *in vivo* -like activity levels.
Departmental Seminar, MPI for Biophysical Research, Department Erwin Neher.
Göttingen, Germany, 2007.

Synaptic transmission at the Calyx of Held under *in vivo* -like activity levels.
Departmental Seminar, Department of Biological Sciences, Lehigh University,
Bethlehem, Pennsylvania, 2007.

Synaptic transmission in the Auditory System.
Departmental Seminar, Department of Biology, Humboldt University,
Berlin, Germany, 2008.

Processing of complex streams of activity in the auditory brain stem: A combined in-vivo - in-vitro approach.
Eight International Workshop on Auditory Processing,
Cody, Wyoming, 2009.

Processing of complex streams of activity in the auditory brainstem.
Departmental Seminar, Dept. of Neurobiology, Univ. of Texas at Austin, 2010.

Short term plasticity and its effects on information processing in the auditory brain stem. Departmental Seminar, Department of Biological Sciences, University of Illinois at Chicago, 2011.

Teaching Experience:

Animal Physiology Student Lab, Undergraduate Level,
160 students per class, taught 4 times. Student ratings between 4.5 and 5 of 5.

Comparative Anatomy and Evolution Student Lab & Seminar, Undergradutae Level,
48 students per class, taught 5 times. Student ratings between 4.5 and 5 of 5.

Introduction to Neurobiology, Lecture, Seminar, & Lab, Graduate Level,
15 students per class, taught 3 times. Student ratings between 4.5 and 5 of 5.

Patch-Clamp Course - Lecture & Student Lab, Graduate Level,
5 students per class, taught 5 times. Student ratings between 4.5 and 5 of 5.

Synaptic Transmission at the Frog Neuromuscular Junction, Medical Student Curriculum, 5 students per class, taught 10 times. Student ratings between 4.5 and 5 of 5.

Teaching Experience (cont.): Molecules to Memory: Synaptic Transmission. Medical Student Curriculum, 150 Students per class, taught 1 time. Student ratings between 4.4 and 5 of 5.

Course Director for Introduction to Systems Neuroscience: Lecture for first year graduate students. Taught 2 times, served as course director 1 time. Students ratings in each case between 4.6 and 5.0 of 5.

Life Sciences for Bioengineers. Lecture course for bioengineering students. Taught 2 times. Student ratings between 4.4 and 5 of 5.

Lab Rotation - Neurobiology Research Project, Graduate Level,
1 student per class, taught 5 times. No formal instructor survey performed.

PhD Thesis Advisor (2 Students), Co-Advisor (3 Students), Master Thesis Co-Advisor (2 Students), and PhD Thesis Committee Member (1 Student).
No formal instructor survey performed.

Graduate Programs:

Physiology & Biophysics

Neuroscience

Bioengineering

Biomedical Sciences

Medicat Scientist Training Program (MD/PhD Program)

Technology Transfer:

A. Klug and T. Lei:
A computer based high precision stereotaxic device for small animals.
TTO Case Number CU 2526H.

A. Dondzillo, A. Klug, and T. Lei:
A system to facilitate the analysis of large quantities of anatomical data.
TTO Case Number CU 3048H.

Committee Work:

Member, faculty search committee, Department of Physiology & Biophysics
November 2010 – May 2011

Member, space committee, Department of Physiology & Biophysics
August 2011 – January 2012

Chair, retreat committee, Neuroscience Graduate Program
Fall 2010 -

Member, executive committee, Neuroscience Graduate Program
Fall 2010 -

Member, admissions committee, Biomedical Sciences Program
Spring 2011 –

Senator, Faculty Senate, School of Medicine
Fall 2010 -

Member, Graduate Council, University of Colorado Denver / Anschutz
February 2011 -

Current Research Interests:

Stimuli from the outside world are transduced into complex trains of action potentials, which are subsequently processed step-by-step by a network of sensory nuclei. During these processing steps, components of the spike trains may be emphasized, removed, or modified in some other way, with the goal to extract biologically relevant information from the train and represent features of the environment. My research interest lies in understanding how these transformations happen, i.e. how an incoming spike train with its particular properties is transformed into an outgoing spike train with its particular, but different properties. Our laboratory uses *in-vivo* as well as *in-vitro* electrophysiology combined with neuronal modeling as well as optogenetics to study these transformations. Our model system is the mammalian auditory brain stem. Auditory brain stem nuclei are only a few synapses away from the sensory surface, such that their inputs are still relatively untransformed and relatively simple. Their afferent projection pattern is also relatively simple and mostly well understood. Most importantly, the biological relevance of many of these nuclei is known. For example, several auditory brainstem nuclei are involved in the sound localization pathway and thus, new information can be elegantly related to the biological task these brain areas are performing, and in some cases directly to the animal's behavior. One line of research that our lab is currently pursuing (R01 funded) is to investigate the neural transformations that occur at one of the nuclei in the sound localization pathway, the medial nucleus of the trapezoid body (MNTB). This nucleus is a master switch for fast and well-timed neural inhibition to the sound localization pathway, and controls neural firing in a number of upstream nuclei. We would like to understand the behavioral circumstances under which MNTB controls firing of these nuclei, and under which circumstances that control is suspended.

Precise sound localization is obviously an important skill for a predator attempting to catch prey, or a prey trying to escape from the predator. However, even in our modern world we use our sound localization skills on a daily basis, for example when we are trying to carry a conversation in crowded environments where many background noises are present. In such a situation, our sound localization system establishes "channels of space" and helps us focus on the particular spatial channel we are interested in at that moment. This ability to isolate a sound source among background noises degrades as we age, and a large percentage of our population has difficulty carrying a conversation in background noise, even though their ears may function perfectly. We now know that age related changes in fast and well-timed inhibition play a major role of this type of age-related hearing deficit. A second line of research (Team Award funded) that our lab currently pursues is to investigate how exactly age-related changes in fast neural inhibition are related to age-related changes in hearing performance. These translational studies are done both in mice and humans, and the overall goal of this project is to determine auditory areas that would be the most promising targets for gene therapy interventions.

Finally, according to one model of low-frequency sound localization, fast and well-timed inhibition from MNTB plays a critical role in the adjustment of receptive fields of neurons in the low-frequency sound localization pathway (Fast inhibition model). According to an older model (Jeffress model), the same inhibition plays no role at all in the adjustment of receptive fields. We are just beginning to manipulate MNTB neurons with light-sensitive ion channels (halorhodopsin-type constructs) and glass fiber implants in an attempt to reversibly remove MNTB from the sound localization pathway while testing the effects of this manipulation on the behavioral performance of rodents (pending R21 funding).

Earlier Studies:

During my doctoral work with Dr. George Pollak at the University of Texas I investigated the question, how different inputs to the inferior colliculus in the auditory midbrain interact during the processing of simple and complex sound stimuli. I learned *in vivo* recording methods, as well as methods to pharmacologically manipulate neural circuits *in vivo*. I became interested in the question how natural and biologically relevant sounds are processed by the inferior colliculus, and what exactly the contribution of its various inputs to the computational process was. It became increasingly important to me find quantitative ways to describe the

relative contribution of the various inputs, rather than merely describing their effects on a qualitative level. I converted my spike data into mathematical descriptions of the neuron's response, similar to STRFs, and, in collaboration with Frederic Theunissen at UC Berkeley also calculated actual STRFs through reverse correlation. I saw two strengths in these mathematical approaches: It would allow me to quantitatively assess the relative importance of the various projections to IC to auditory processing, and, through using the STRFs for predicting a neuron's response, I would be able to gauge my level of understanding of the computational processes performed by the neuron. The rationale here was that if the mathematical model was able to make very accurate descriptions of the neurons actual response, the model must be using similar rules for the processing of information as the actual brain does, and thus I must be close to understanding the processing steps performed by that neuron.

All these studies were done *in vivo* with extracellular recordings. During my doctoral work I became increasingly aware that this technique, especially in combination with the pharmacological manipulations, was an elegant way to address questions regarding the input pattern of neurons and the interaction of these inputs, but it would not allow me to investigate a neuron's membrane and synaptic properties, which certainly must also make a major contribution to information processing. So I decided to learn *in vitro* and patch-clamp techniques during my postdoctoral research, which should enable me to address these latter questions. I moved to Dr. Larry Trussell's laboratory at Oregon Health and Science University in Portland (Vollum Institute) and started to work on brain slice preparations of the medial nucleus of the trapezoid body (MNTB) of the auditory brainstem. I looked at the question, how different types of potassium channels contribute to a neuron's responses to trains of action potentials at various frequencies. The current picture at the time, obtained from *in vitro* recordings performed mainly at room temperature, was that there are the two types of potassium channels present in MNTB neurons. Of these, only a high-threshold type, a Kv3.1 channel, is involved in cycle-by-cycle processing of activity, while a low-threshold type, a Kv1.1/1.2 channel, opens and closes only very slowly and thus could not participate in information processing on a cycle-by-cycle basis. In contrast to the literature, I found that the 'slow' low threshold potassium channel does operate at a fast enough time scale to participate in the processing of single spike events, when experiments were performed at physiological temperature. I drew two lessons from this work: *In vitro* and patch clamp techniques are a powerful way to address the types of questions I wanted to address, but the reduced preparation also has potential pitfalls and should be used smartly. I decided that any *in vitro* work which aims at investigating the functioning of the intact brain would have to done under conditions which attempt to match the conditions in the intact brain as closely as possible.

I moved then to Dr. Benedikt Grothe's lab at the University of Munich to work in a semi-independent position. The main goal of my small research group, funded by a project grant from the German research council (DFG), was to bridge *in vivo* and *in vitro* physiology as closely as possible and investigate cellular and synaptic aspects of information processing with a very systems-oriented approach. The first data emphasized the importance of this approach: When investigating synaptic transmission at the calyx of Held / MNTB synapse in response to complex activity patterns, we found that many parameters of synaptic transmission at the calyx change dramatically, when biologically relevant spontaneous background activity is introduced into the preparation. This activity, typically present in the intact brain, is lost during slice preparation and as a result, synapses in brain slices are artificially silent. This has important implications on basic parameters of transmission such as synaptic current, latency, synaptic depression, recovery from depression, or reliability of transmission. These findings were possible only through close integration of *in vivo* and *in vitro* experiments, performed by two graduate students who worked in parallel and collaborated very closely. Results from subsequent modeling work suggested that synaptic transmission at the highly active calyx of Held is not only different from transmission at inactive synapses, but can be mathematically described in much simpler terms. Our physiological interpretation of this finding is that some of the known mechanisms of short-term plasticity (e.g. synaptic facilitation) may not be very plastic during chronic and long-term activity, as they behave mathematically 'neutral'.

Philosophy:

When I look back at my own education, it becomes very obvious to me, how my teachers influenced my own career path. Classes taught by great teachers had a deep and lasting impact on me, while classes taught by less-than-great teachers were forgotten much more quickly, or worse, convinced me that a particular field is not for me. Moreover, it is fair to say that teachers did not only serve to convey course material, but also served as role models who were consciously and subconsciously scrutinized for honesty, integrity, fairness, enthusiasm for their subject, and every other aspect of their personality that is accessible to a student. Qualities such as the clarity of a presentation, or the smart use of didactic tools can only be a basic foundation of good teaching, and a number of softer skills make the difference between an acceptable and a great teacher.

I have always enjoyed teaching students of every level from high school to graduate school, and have also enjoyed teaching in a large variety of settings, from large classroom lectures to one-on-one labs. I find it very rewarding to see my students succeed, and will do everything I can to support them.

Teaching Experience and Metrics:

Including graduate school, I have significant teaching experience from three different institutions (University of Texas, University of Munich, University of Colorado). I have taught high school students, undergraduate students, graduate students, postdocs, and medical students at three different institutions. The types of classes include

- large-classroom lectures with 150+ students (medical students, undergraduates),
- small classroom lectures (graduate students, undergraduates),
- student labs (med students, graduate students, undergraduates, high-school students),
- student seminars (undergraduate students)
- one-on-one instruction in the lab (all levels)

The courses I taught in the past covered a large area of biology. Some courses were introductory courses (human physiology, neuroscience, comparative anatomy and evolution, introduction to biology), while others were very specialized (synaptic physiology, synaptic physiology lab, neuroethics, free will, patch clamp recordings, intracellular recordings, computer simulations of the action potential).

For all types of classes at all institutions for which formal evaluations were performed, I have consistently received very high student ratings of about 4.5-5 out of 5 (5 is best). Evaluations can be provided upon request.