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Dear colleagues,

I am writing on behalf of Dr. Gabriel Mindlin in support of his application for a faculty position. My comments are mainly based on his recent work with models of the songbird vocal organ, the syrinx. As a biologist I cannot claim that I have a full understanding of the physics underlying these models, but I can describe how this work relates to my own experimental work on this subject and the field of birdsong production.

Dr. Mindlin and his colleagues approached modeling of sound production in the songbird syrinx in a way that differs from approaches taken by most other scientists. Previous theoretical work largely ignored details of syringeal morphology and physiology. Taking into consideration new experimental evidence on the *in situ* behavior of the syringeal sound generators, Dr. Mindlin and colleagues generated models of sound production that are advanced in comparison to previous work. Not unlike previous models, the new models can generate sounds that are very similar to actual, recorded sounds. However in contrast to most previous models, Dr. Mindlin's models give me confidence that they describe events that are close to the actual biological system. This relevance for the biological situation gives the new models great predictive power. As such Dr. Mindlin's work is of great value to the field, because the naturalistic models allow us experimentalists to redirect our focus to new and interesting questions and test hypotheses that are difficult to tackle experimentally. It is my own opinion and that of all of my colleagues, with whom I have discussed this work, that Dr. Mindlin's models represent the most useful modeling work on the songbird syrinx to date.

I am fortunate to collaborate with Dr. Mindlin on several projects in which we combine theoretical and experimental work. It is my hope that with this approach we will gain a theoretical understanding of sound generation mechanisms in the songbird syrinx that will, in the future, parallel that of the human larynx. One of Dr. Mindlin's strengths is that he makes sure to learn about the biology of his subject of interest, be it through reading or contacting experts in the field. This observation does not only apply to my direct involvement with Dr. Mindlin, but is also true for his other projects relating to birdsong. Some of these other projects include very interesting work about neural computation of song production and song learning. A good theoretical approach to these neurobiological questions will also advance this particular field, which currently is investigated by experimental neural techniques and therefore subject to severe limitations in understanding computational processes in the brain.

I also know Dr. Mindlin personally and appreciate his modest and generous personality. He is very supportive of his students and colleagues. It would be a great

personal gain for any department to have such an unselfish and generous person as a colleague.

In summary, I can say without reservation that Dr. Mindlin has significantly advanced our theoretical understanding of birdsong production in a very short time period. He approached these biological questions with the biology at the forefront of his physical thinking, making his models stand out of all other theoretical approaches.

Should you have any further questions regarding my experiences with Dr. Mindlin, please feel free to contact me.

Sincerely,
Franz Goller
Asst. Prof. of Biology