

Duke University

DURHAM
NORTH CAROLINA
27708-0281

DEPARTMENT OF BIOMEDICAL ENGINEERING
PRATT SCHOOL OF ENGINEERING
ROOM 136, HUDSON HALL
BOX 90281

TELEPHONE (919) 660-5131
FAX (919) 684-4488

January 6, 2004

To Whom It Might Concern:

This letter of recommendation is written on behalf of Dr. Alena Talkachova in relation to her application for the faculty position.

I have known Dr. Talkachova since Fall 2001. She came to Duke as a postdoc, to work with Dr. Gauthier, Dr. Schaeffer, and myself on a project related to using methods of nonlinear dynamics to characterize and control electrical activity of the heart. Hence, my relationship to Dr. Talkachova was that I collaborated with her and, together with the two faculty members mentioned above, supervised her research.

Dr. Talkachova's original background is in physics, with specialization in optics and nonlinear dynamics. Even though she had no prior experience in electrocardiology when she came to work with us, she studied intensively on her own and quickly gained considerable knowledge of this area. By now, she has a thorough understanding of the fundamentals and she is familiar with the current research related to her work.

Dr. Talkachova possesses scientific creativity rarely seen in somebody at such an early stage of their career. This creativity, coupled with her superb analytical skills, great perseverance, and careful attention to detail, have contributed to some of the most important scientific results obtained by our group. In particular, she was the main force behind the development of two novel tools for characterizing the response of the heart to fast pacing: the "perturbed downsweep protocol" and the "restitution portrait." These tools give a more comprehensive assessment of the dynamics of cardiac rhythm than the restitution curves used to date.

In my opinion, Dr. Alena Talkachova is a very promising scientist who is on the brink of making important discoveries in the area of characterization and management of cardiac rhythm. A new method for investigating restitution properties of periodically paced cardiac tissue, which will result from her work, is likely to revise the criteria for cardiac electrical instability used in the clinic. A faculty appointment will allow her to establish her own laboratory and to pursue her original research ideas. I have no doubt that she has sufficient abilities, motivation, and expertise to conduct independent research, advise students, and secure funding. Thus, the hiring of Dr. Talkachova presents a unique opportunity of establishing or expanding a research program in nonlinear dynamics and electrophysiology which, in my opinion, has a potential for attracting substantial external funding.

Therefore, I enthusiastically support Dr. Talkachova's application for the faculty position.

Yours truly,



Wanda Krassowska, Ph. D.
Thomas Lord Faculty Scholar and
Associate Professor, Biomedical Engineering