Approved by the Regents
May 17, 2007

**PROMOTION RECOMMENDATION**
The University of Michigan
College of Engineering

Daryl R. Kipke, associate professor of biomedical engineering, with tenure, Department of Biomedical Engineering, College of Engineering, is recommended for promotion to professor of biomedical engineering, with tenure, Department of Biomedical Engineering, College of Engineering.

Academic Degrees:

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| Ph.D. | 1991 | University of Michigan, Bioengineering, Ann Arbor, MI |
| M.S.E. | 1988 | University of Michigan, Electrical Engineering, Ann Arbor, MI |
| M.S. | 1986 | University of Michigan, Bioengineering, Ann Arbor, MI |
| B.S. | 1985 | University of Michigan, Engineering Science, Ann Arbor, MI |

Professional Record:

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| 2001 – present | Associate Professor (with tenure), Department of Biomedical Engineering, University of Michigan |
| 2002 – 2005 | Associate Professor (without tenure), Department of Electrical Engineering and Computer Science, University of Michigan |
| 1998 – 2001 | Associate Professor, Bioengineering, Arizona State University |
| 1992 – 1998 | Assistant Professor, Bioengineering, Arizona State University |
| 1991 – 1992 | Adjunct Instructor, Syracuse University |
| 1991 – 1992 | Research Fellow, Syracuse University |
| 1986 – 1991 | Graduate Research Assistant, University of Michigan |

Summary of Evaluation:

Teaching: Professor Kipke is an excellent educator. He has reformulated and taught Biomedical Instrumentation, a laboratory course that is one of the most important courses in the undergraduate biomedical engineering curriculum, and has received strong teaching scores for this required course. In surveys of graduating students, this course is routinely cited as the course in which students learned the most. He has also developed a graduate-level course in Neural Engineering that has been very well received by the students. He has a large research group and has chaired or co-chaired dissertation committees for 12 Ph.D. students, is currently chair or co-chair of 14 ongoing Ph.D. students, and has mentored numerous undergraduate students. All of his former Ph.D. students have gone on to excellent positions in academia or industry.

Research: Professor Kipke's research thrust is in the study of the brain and the development of technology and devices to repair it after injury or disease, and he is an international pioneer in this area. He is particularly well-recognized for work related to device design and fabrication and application of these devices for recording and/or stimulating neurons. His research program is very well funded, at present with three NIH grants including a prestigious and highly competitive "P41" Biotechnology Research Center funded by the National Institute for Research Resources. His publication record is strong, particularly recently with roughly 2/3 of his 30 journal articles coming in the last five years since joining the University of Michigan. This represents a substantial increase in productivity and marks the great potential of Professor Kipke and his research group. Professor Kipke has also made very substantial contributions to technology transfer. He was co-founder of two companies formed in the last five years that have served as conduits to take technology developed in his laboratory and translate that into commercial products and clinical applications. These companies are developing and have developed

products for embolization of neurovascular lesions and implantable microscale neural probes. External reviewers clearly have great respect of his work and his leadership in neural engineering.

Recent and Significant Publications:


Marzullo, T.C., C.R. Miller and DR. Kipke, "Suitability of the cingulated cortex for neural control", *IEEE Transactions on Neural Systems and Rehabilition*, 14(4), pp 401-409, 2006.

Otto, K.J., M.D. Johnson, and D.R. Kipke, "Voltage pulses change neural interface properties and improve unit recordings with chronically implanted microelectrodes," *IEEE Transactions on Biomedical Engineering*, 53 (2), pp 333-340, 2006.

Ludwig, K.A., J. Uram, J. Yang, D. C. Martin, and D.R. Kipke, "Chronic recording performance of silicon microelectrode arrays with conductive polymer recording sites," *Journal of Neural Engineering* 3 (1), pp. 59-70, 2006.

Gage, G.J., K. A. Ludwig, K. J. Otto, E. L. Ionides, and D. R. Kipke, "Naive coadaptive cortical control," *Journal of Neural Engineering*, 2(2), pp 52-63, 2005.

Otto, K. J., P. J. Rousche, and D.R. Kipke, "Best-frequency dependent behavior induced by cortical microstimulation in auditory cortex of rat," *Journal of Neural Engineering*, 2(2), pp 42-51, 2005.

Johnson, M. D., K. J. Otto, and D. R. Kipke, "Repeated voltage biasing improves unit recordings by reducing resistive tissue impedances," *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 13(2), pp.160-165, 2005.

Vetter, R.J., J. C. Williams, J. F. Hetke, E. A. Nunamaker, and D.R. Kipke, "Spike recording performance of implanted chronic silicon-substrate microelectrode arrays in cerebral cortex," *IEEE Transactions on Biomedical Engineering*, (51) 6:896-904, 2004.

Rousche, P.J., K.J. Otto, M.P. Reilly, and D.R. Kipke, Single-electrode intracortical micro-stimulation of rat auditory cortex: an evaluation of behavioral performance. *Hearing Research*, 2003. 179(1-2): p. 62-71.


Service: Professor Kipke has assumed a substantial service role at both the institutional and national level. Major service roles at the University include chairing an internal review committee for the Department of Biomedical Engineering, chairing two promotion and tenure casebook committees, and service on several search committees and other casebook committees. He has been a member of departmental graduate education committees and coordinated a revamping of the qualifying exam procedure. He is a member of the University's Faculty Advisory Group on Industry and Technology Transfer and the OVPR Conflict of Interest Committee. Nationally, he has served on numerous NIH review panels, has served as track co-chair for international meetings, is an associate editor of IEEE Transactions of Biomedical Engineering, a top-tier journal in his field, and reviews for several other journals.

External Reviewers:

Reviewer (A): "This is a very intense and competitive area of research at the moment and many groups are placing electrodes in the brain for recording neural activity and using these signals for controlling external devices. I would say that he has placed himself in the top five in the world in this area of research."

Reviewer (B): "In regard to Daryl's standing in the field of neural interfacing, there is little doubt that his name and reputation are well known among the leaders in this community. His work has contributed significantly to the advancement of this rapidly-growing area..."

Reviewer (C): "Dr. Kipke is recognized as an international leader in the field of neural engineering. ...I have developed respect and admiration for him as an innovative scientist and mentor of students."

Reviewer (D): "I think it is important to enhance biocompatibility of the neural probe. Daryl has done important work to achieve it. Therefore I consider Daryl to be a world leader in technology development."

Reviewer (E): "Dr. Kipke...has built a very successful laboratory, secured significant funding, and has a strong publication record. He has a well-deserved international reputation for the quality of his research. He has become a leader in this field of research."

Reviewer (F): "In my discussions with basic scientists, research engineering and clinicians, he is uniformly recognized as a leader. I am not aware of any one else who is so recognized. There is no question that Dr. Kipke would receive promotion at [my institution]."

Summary of Recommendation: Professor Kipke is an internationally recognized leader in neural engineering. His research program is well-funded, productive and focused on important application areas in neuroscience. He is also very active in translating his innovations into commercial and clinical products. He is an excellent instructor in the classroom, as well as a talented and dedicated educator and mentor to a large body of undergraduate students, graduate students, and post-doctoral researchers. He has made valued service contributions to the University and to his research field. It is with the support of the College of Engineering Executive Committee that I recommend Daryl R. Kipke for promotion to professor of biomedical engineering, with tenure, Department of Biomedical Engineering, College of Engineering.

David C. Munson, Jr.
Robert J. Vlasic Dean of Engineering
College of Engineering

May 2007