NAVAL MEDICAL RESEARCH INSTITUTE
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Feb.22,1972

Dr. Marshall Nirenburg
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Dear Dr. Nirenburg,

I attended your recent seminar at our Institute. Your experimental data and their implications are most interesting.

If I understand correctly, you found that B-type cells which contain Acetylcholine Esterase and respond to electrical stimulations with local potentials. A-type cells can respond to electrical stimulation with action potentials. Your findings remind me of the basic differences between the so-called synaptic membrane which has acetylcholine receptors or chemoreceptors and the nonsynaptic membrane which has no chemosensitivity. I wonder whether the differenciation between the A-type cells and B-type cells also depends upon the presence of chemoreceptors. The synaptic membrane has the following properties:(1) it is chemically excitable,(2) it only generates local and graded potential responses, (3) it contains chemoreceptors. The nonsynaptic membrane has the following characteristics:(1) it is electrically excitable,(2) it is not chemically excitable,(3) it can generate action potentials which are regenerative and propagated events.

It seems to me that the B-type cell membrane may be chemically excitable, which indicates the presence of chemoreceptors. To test this, one may use intracellular and extracellular iontophoresis to eject acetylcholine or other transmitters to the surface of the cells and record cell membrane potential changes. If you are interested in these experiments and techniques, I would be glad to be helpful. I am sure the electrophysiologists in your lab can do these experiments easily. Your lecture was very stimulating and I enjoyed listening to you.

Cordially yours,
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