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Death by MAO

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Neuronal apoptosis plays a critical role in the development of the nervous system and in neurodegenerative disease. In the Early Edition of the [Proceedings of the National Academy of Sciences](#), De Zutter and Davis report a study of pro-apoptotic, neuronal gene expression and the identification of [monoamine oxidase \(MAO\)](#) as a death-inducing gene. They used the well-studied neuronal [pheochromocytoma PC12](#) model, which undergoes apoptosis when deprived of neurotrophic growth factor (NGF). The authors employed subtractive hybridization to identify the A isoform of MAO which was induced 4-fold upon NGF withdrawal. They showed that MAO expression is dependent on p38 MAP kinase signaling. NGF withdrawal increased MAO activity and a MAO inhibitor reduced apoptosis. Furthermore, inhibiting MAO activity also blocked apoptosis induced by the neurotransmitter dopamine, a substrate for MAO deamination.

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