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A new drug may help treat stroke

Distinguished Professor **Michael Chopp**, of the **Department of Physics**, leads an acclaimed group of researchers studying **stroke**. One of their main goals is to extend the brief therapeutic window when the brain can easily recover from a lack of oxygen (**ischemia**). Typically, a patient suffering from a recent stroke is treated using **tissue plasminogen activator** (tPA), a protein involved in breaking down **blood clots**. Chopp's team tested the hypothesis that a second drug, **VELCADE**, when given in combination with tPA, is more effective than VELCADE or tPA alone. VELCADE is a **proteasome inhibitor**, a drug that blocks the breakdown of proteins. Chopp's team presents evidence for the mechanism underlying VELCADE's effect: it blocks the decay of **nitric oxide synthase**, the enzyme responsible for production of **nitric oxide**, an important molecule for protecting neurons in the brain from damage due to ischemia (**neuroprotection**). In a paper published in the May issue of the journal **Stroke**, they report how a **Combination Treatment with VELCADE and Low-Dose Tissue Plasminogen Activator Provides Potent Neuroprotection in Aged Rats after Embolic Focal Ischemia** (Volume 41, Pages 1001-1007, 2010). They conclude that "treatment with VELCADE exerts a neuroprotective effect in aged rats after stroke. The combination of VELCADE with the low-dose tPA further amplifies the neuroprotective effect. Endothelial nitric oxide synthase at least partly contributes to VELCADE-mediated neuroprotection after stroke." One of the coauthors on this paper is **Ben Buller**, a graduate student in the **Biomedical Sciences: Medical Physics PhD program**.

SUMMARY

Distinguished Professor Michael Chopp studies a new drug to treat stroke.

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