SPINAL CORD RESEARCH CENTRE

Health Sciences Centre Foundation

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Clinical study on intrathecal baclofen for the treatment of severe spasticity: Developed protocol and obtained grant funding for the initial research project; confirmed efficacy and showed cost effectiveness (with P. Nance).

New research technology: the first implementation in Canada of the isolated rat spinal cord preparation, allowing preclinical trials for the development of new drug treatments for use with the intrathecal delivery system. Drugs effective for triggering locomotor activity have been identified using this method.

New concept: The mammalian spinal cord contains a powerful distributed network of reciprocal excitatory connections which produce the basic rhythm of locomotion. Targeting the neurons involved in this system for pharmacological control and for regeneration enhancement strategies forms a major basis for future work in the spinal cord injury field.

Discovered intrinsic properties of spinal motoneurons which contribute to their role in rhythmic activity during movement (with S. Hochman).

Discovered a specific type of receptor which must be activated in order to produce rhythmic activity in spinal locomotor neurons.

Discovered a critical mechanism through which receptors involved in the generation of locomotor rhythmic activity are neurochemically modulated.

Spinal Cord Research Centre: Next Steps

- Determine whether the brain can activate spinal cord locomotor function via a descending network of short spinal neurons. If this theory proves to be true, it will have major implications for regeneration research and provide great promise for restoring function in patients with spinal cord injury.
- Development of implantable electrode arrays for detection of descending neural signals above a spinal cord lesion, as a basis of computer control of neural prosthetics and for stimulation of discrete pathways, for restoration of movement after injury (with R. Brownstone and P. Nance).

CPA

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