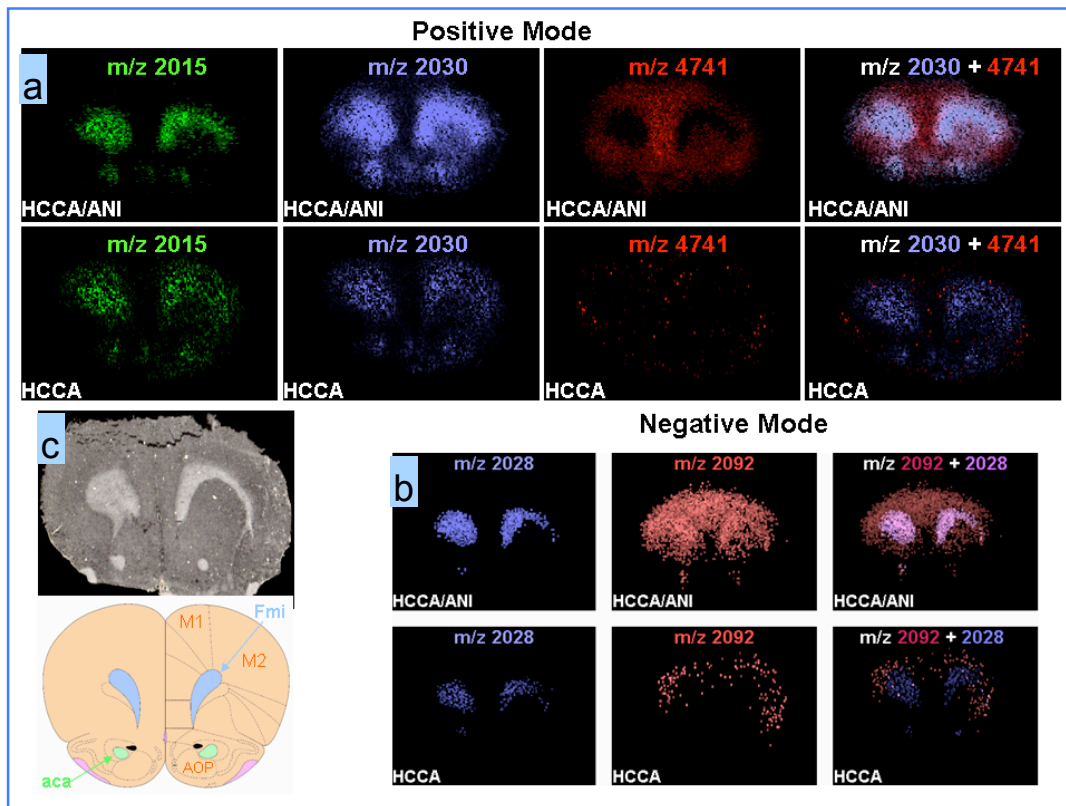


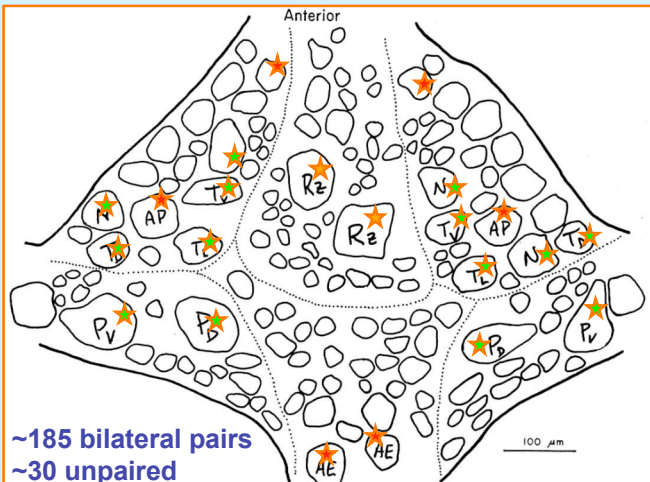
The MALDI-imaging principle: tissue sections from fresh organ or biopsy are laid out on the MALDI target. Sections first covered with a specific matrix depending the nature of the bio-molecule under study. For peptides/proteins, very intense signals are obtained with α -cyano-4-hydroxycinnamic acid (α -CHCA) as a matrix. Sections are covered with α -CHCA (or another matrix) and are then introduced in the MALDI-TOF for analysis. Next, MALDI laser is used to scan each point of the surface area and the mass spectra representative of the peptides/proteins or lipids present in each point are analyzed. Automated analysis of the complete tissue is obtained by performing mass spectra every 10-50 μm , providing representative information of selected ions (each ion is a specific bio-molecule).



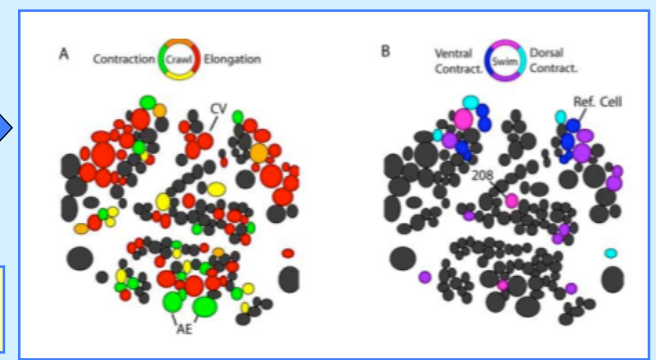
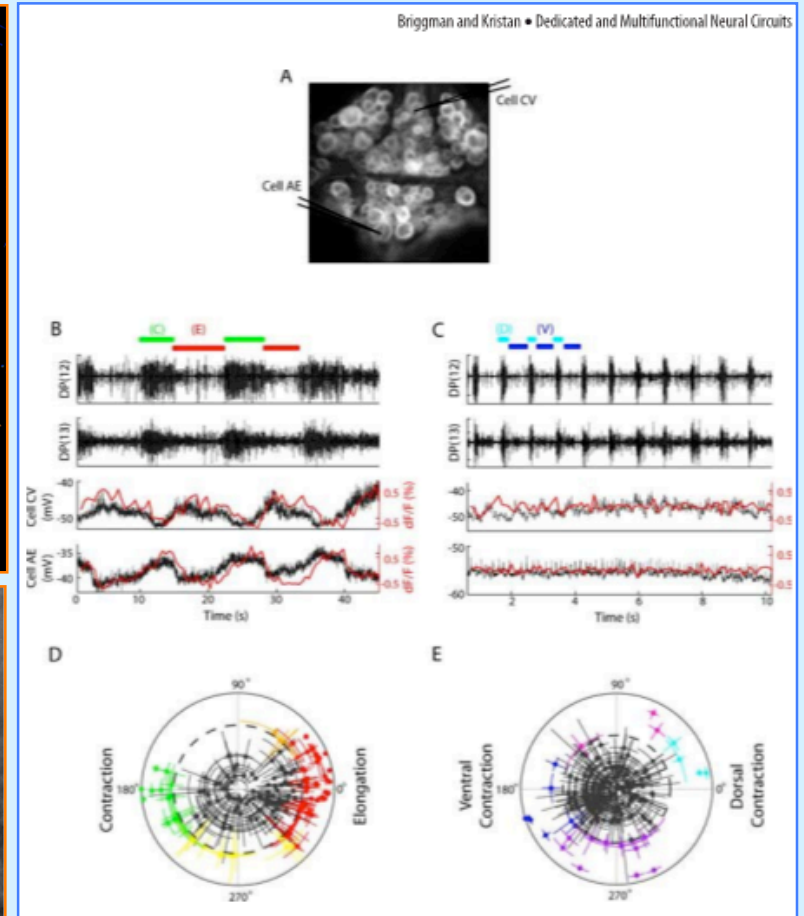
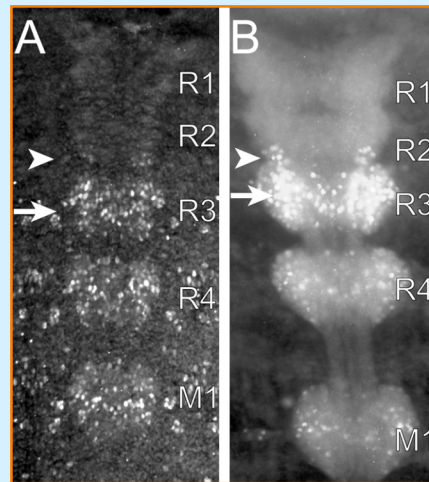
Examples of Scanned Images: MALDI-IMS using MALDI TOF-TOF in reflector mode at 50-Hz repetition rate with ionic matrixes CHCA/ANI and CHCA in positive (a) and negative modes (b). MALDI imaging can be compared with rat brain anatomy (c). For CHCA/ANI and CHCA, acquisitions in both polarities were performed on the same rat brain cut. Images have been reconstructed with the same parameters for ionic matrix and CHCA using FlexImaging software and represent the distribution of a m/z value in the tissue slice. Images with two colors correspond to the superposition of two m/z images.

FROM: Michel Salzet and Isabelle Fournier, Université de Lille

Can the gene expression profile of each neuron in a segmental ganglion uniquely predict its anatomy, synaptic connections and physiology?

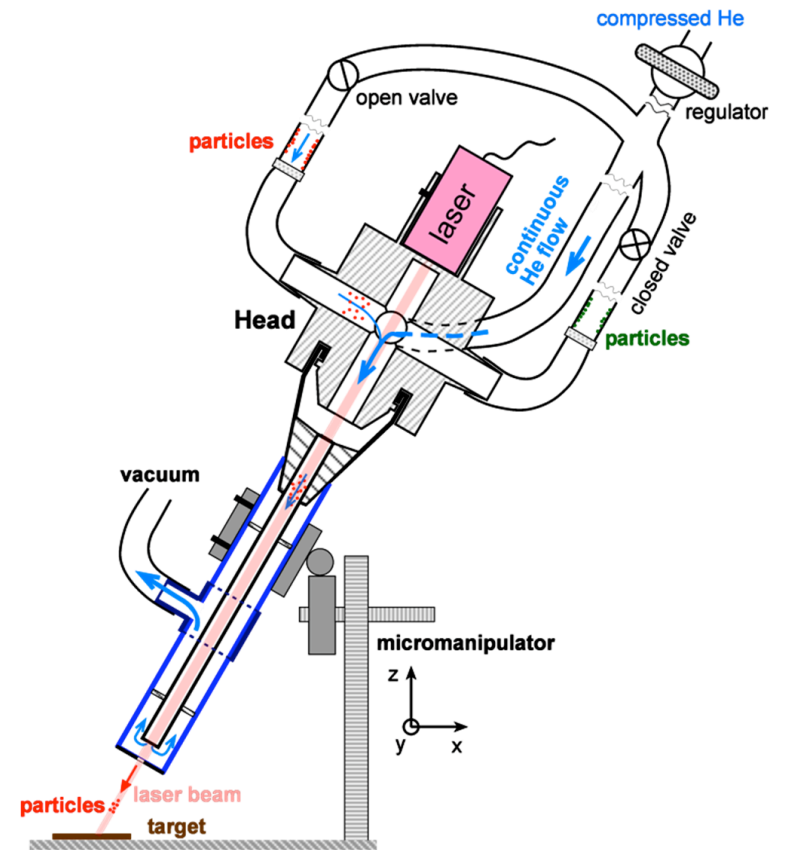
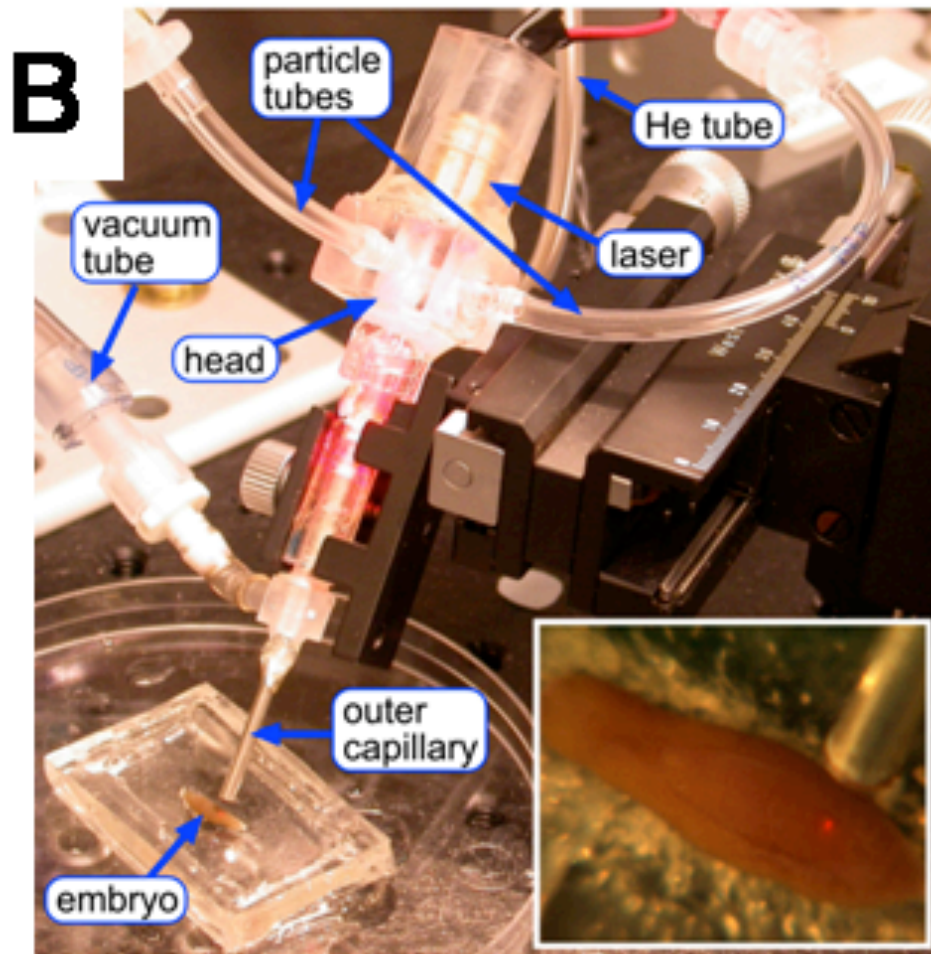
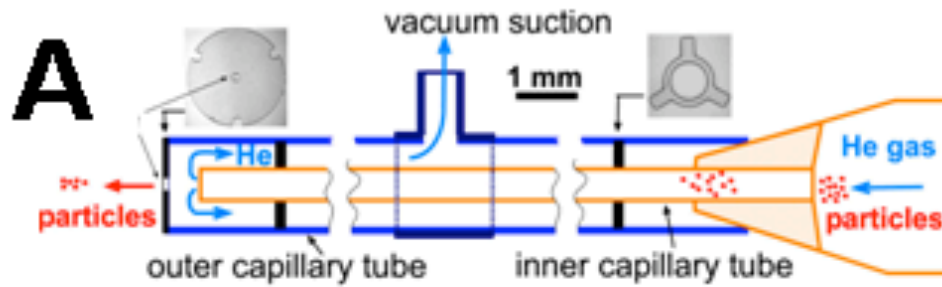


The leech central nervous system is comprised of 32 very similar segmental clusters, with about 400 neurons each, as well as some additional clusters in the head. In the embryo, individual neurons can be studied dynamically in the animal by using fluorescent dye injection and confocal microscopy. Moreover, *in situ* hybridization, immunohistology, DNA microarrays and other techniques, what genes are expressed when can be determined for each neuron or other cell as a function of time in development and in the adult.



From: KL Briggman and WB Kristan Jr,
J Neurosci 26:10925-10933 (2006)

Pneumatic Capillary Gun for Biolistic Intracellular Delivery of Molecular Reagents



Shefi et al., *J. Neurosci.* **26**:6119 (2006)