

**DDF 2016**

***“Un modelo integral para el control motor  
del canto en las aves oscinas”***

Rodrigo Alonso

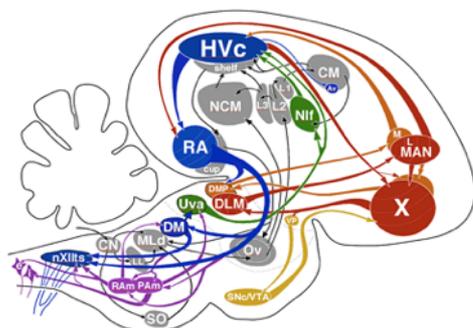


DDF 2016

# “Un modelo integral para el control motor del canto en las aves oscinas”



Rodrigo Alonso



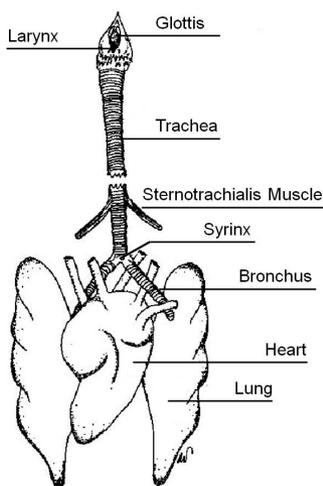
**Sistema Nervioso**

- Mediciones de actividad neuronal
- Modelado matemático de circuitos neuronales

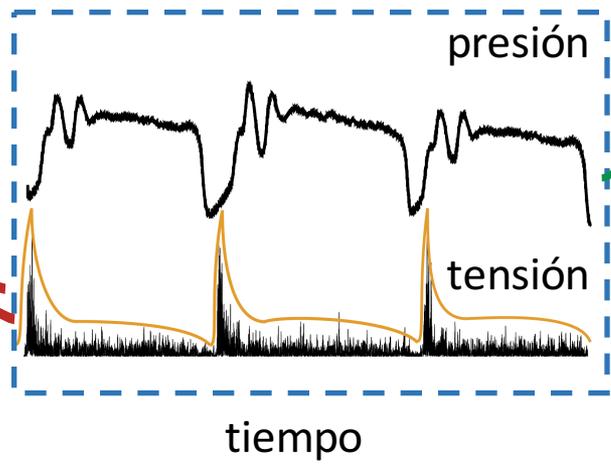
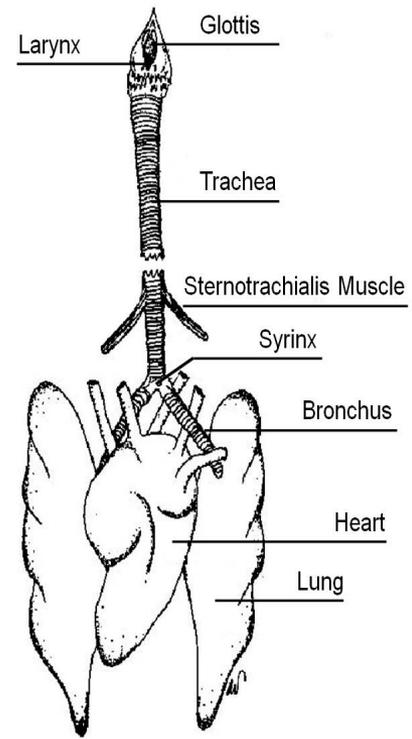


**Sistema Periférico**

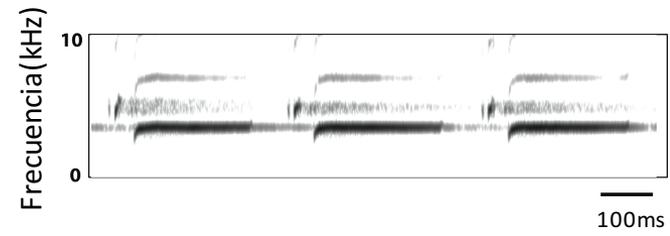
- Mediciones de gestos fisiológicos
- Modelado de la biomecánica

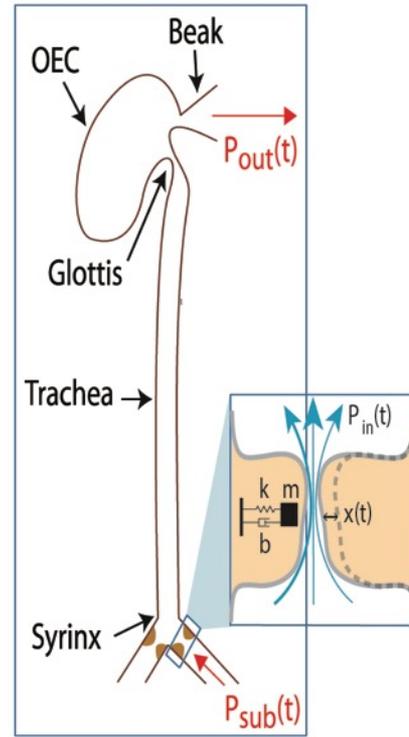


- Presión de los sacos aéreos
- Actividad muscular

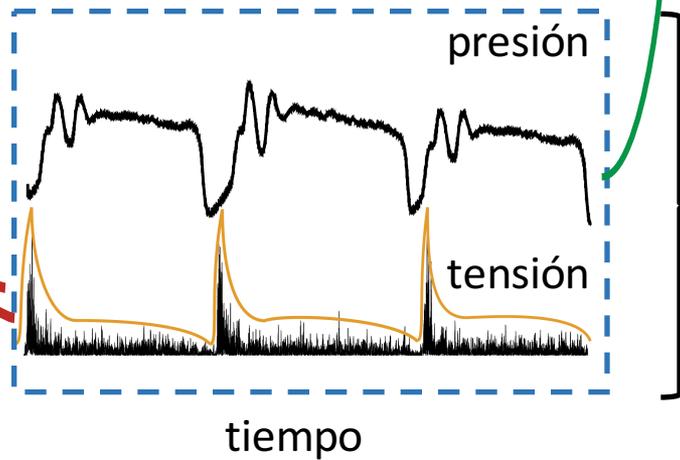
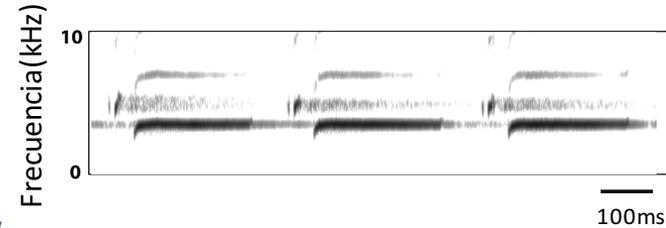


experimental



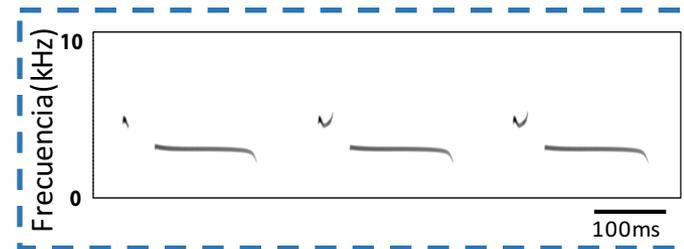


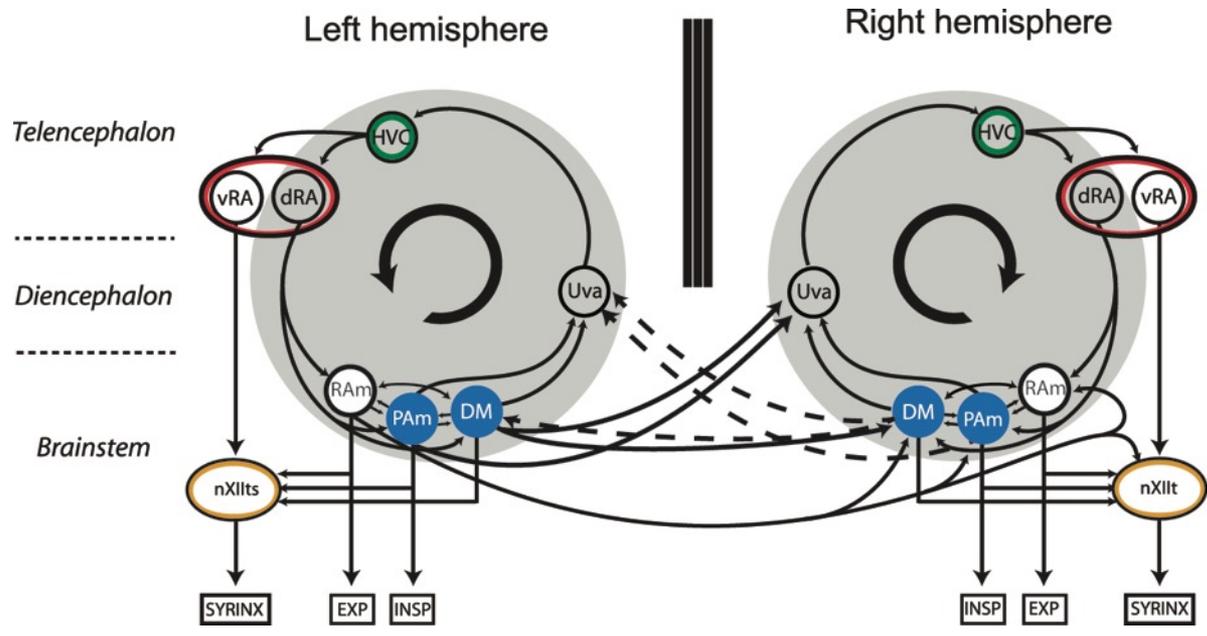
experimental



$$\dot{y} = -\kappa x + \beta y - cx^2y + Fg$$

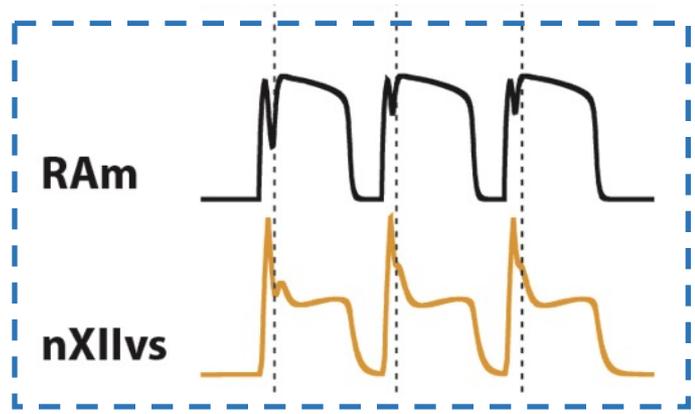
sinético

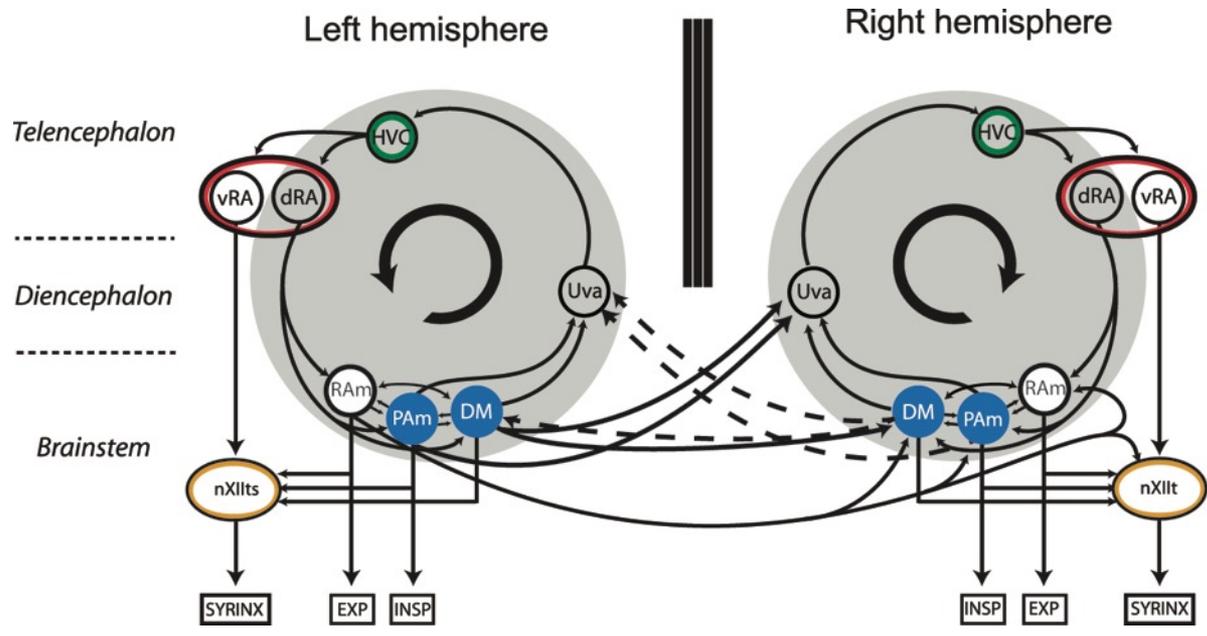




$$\dot{x}_i = -x_i + S\left(\rho_i + \sum_j a_{ij}x_j\right)$$

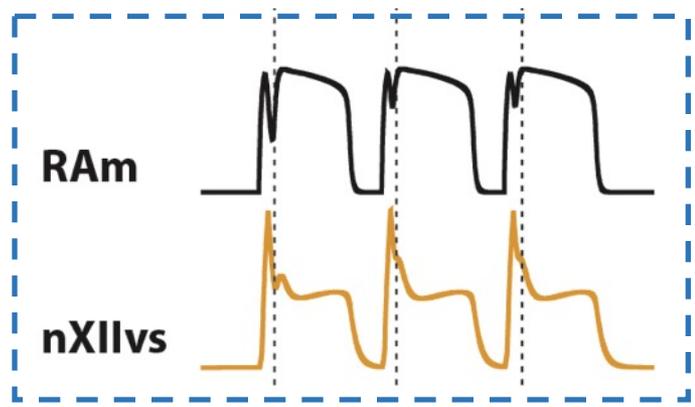
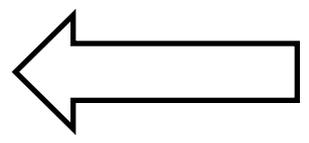
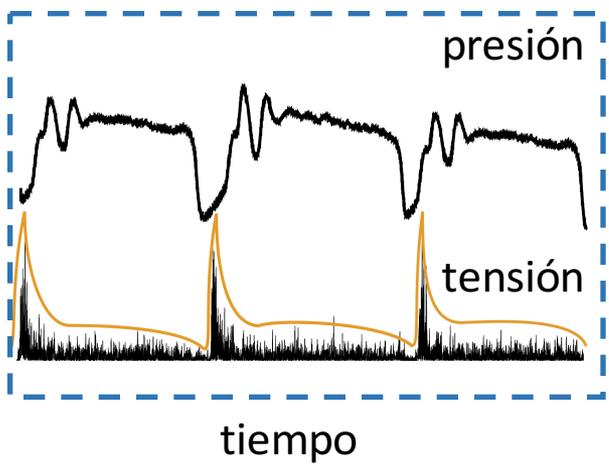
$$S(x) = \frac{1}{1 + e^{-x}}$$





$$\dot{x}_i = -x_i + S\left(\rho_i + \sum_j a_{ij}x_j\right)$$

$$S(x) = \frac{1}{1 + e^{-x}}$$



Left hemisphere

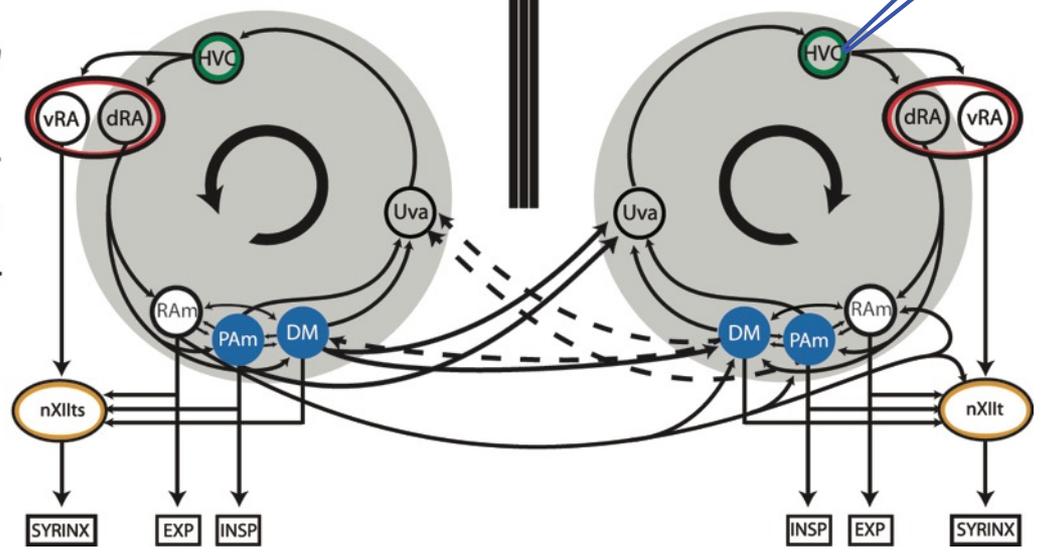
Right hemisphere

Testeo experimental

Telencephalon

Diencephalon

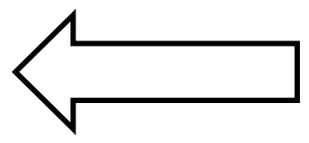
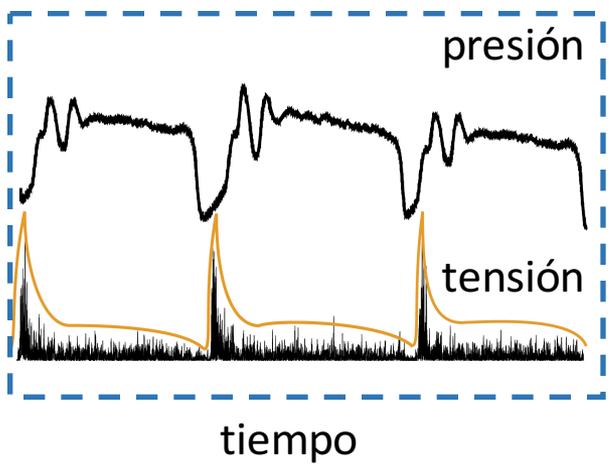
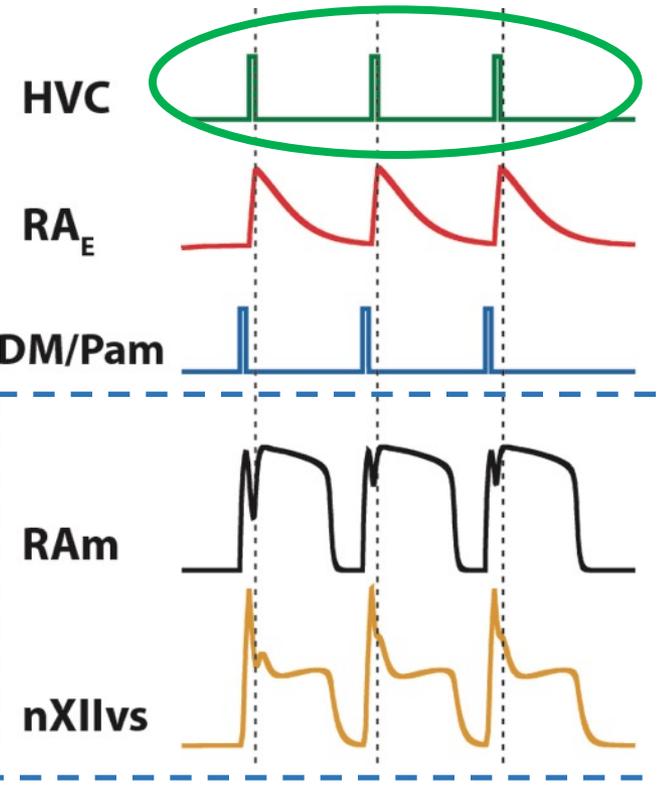
Brainstem

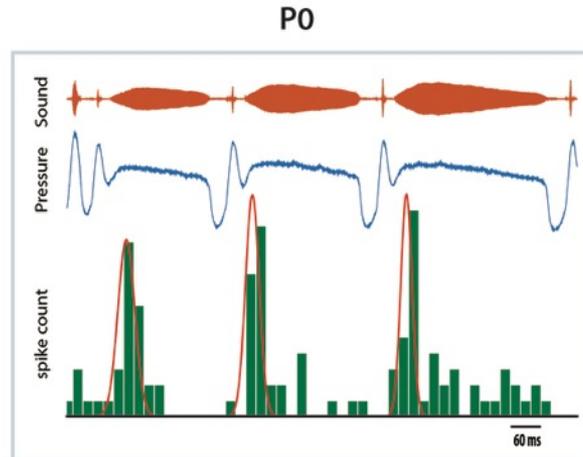
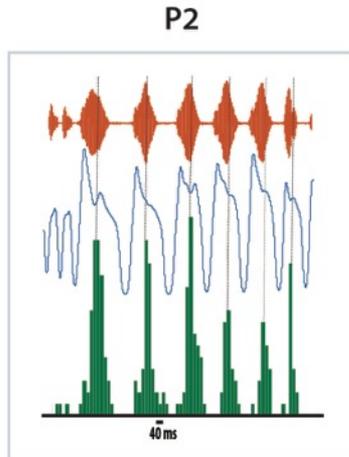
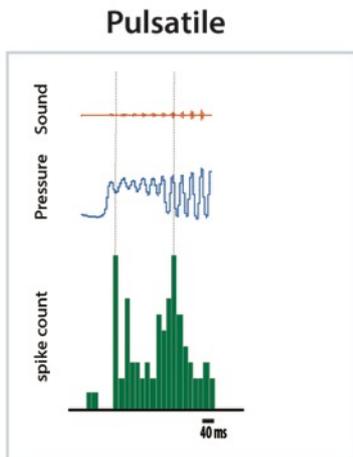
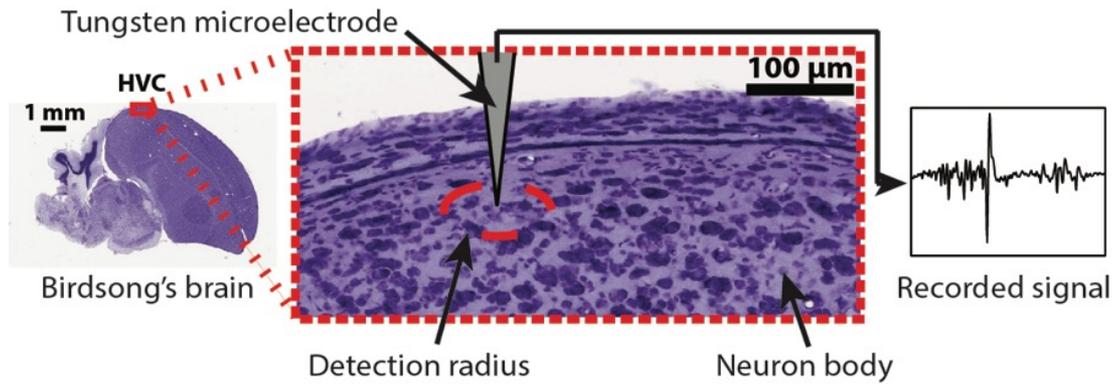


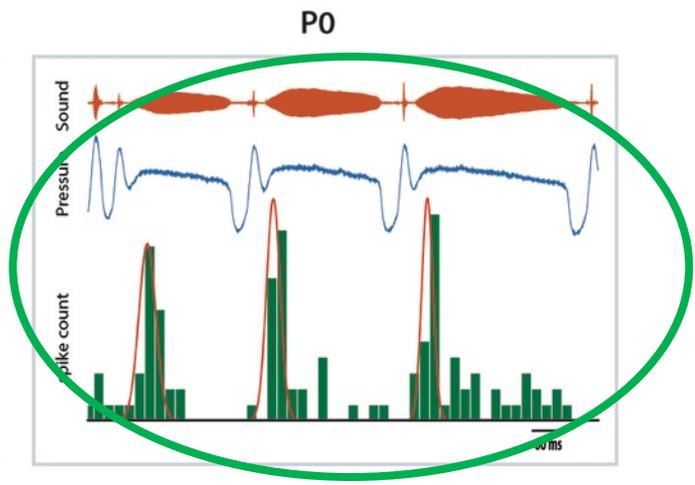
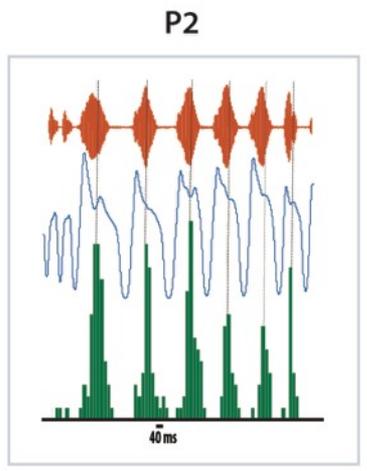
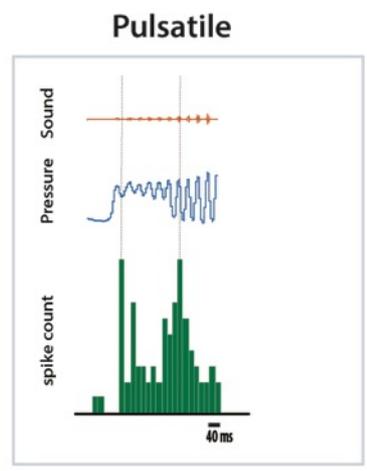
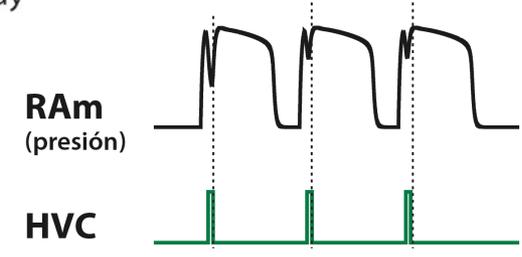
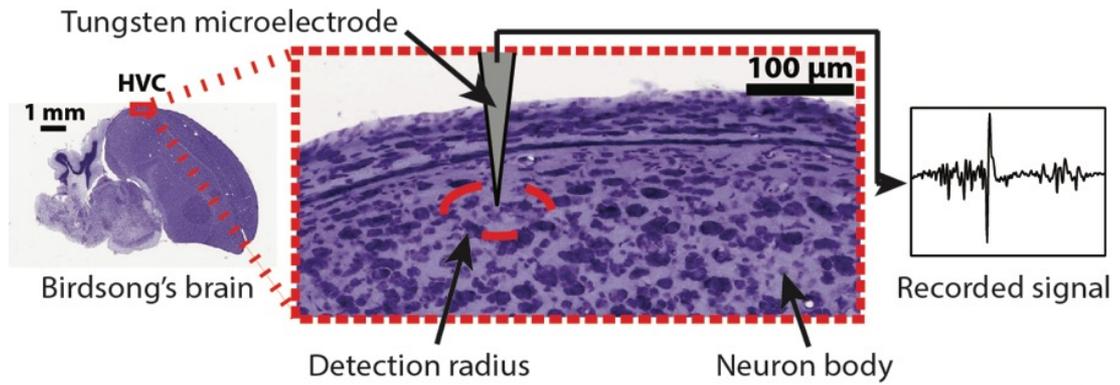
Da predicciones específicas sobre la actividad de ciertos núcleos

$$\dot{x}_i = -x_i + S\left(\rho_i + \sum_j a_{ij}x_j\right)$$

$$S(x) = \frac{1}{1 + e^{-x}}$$

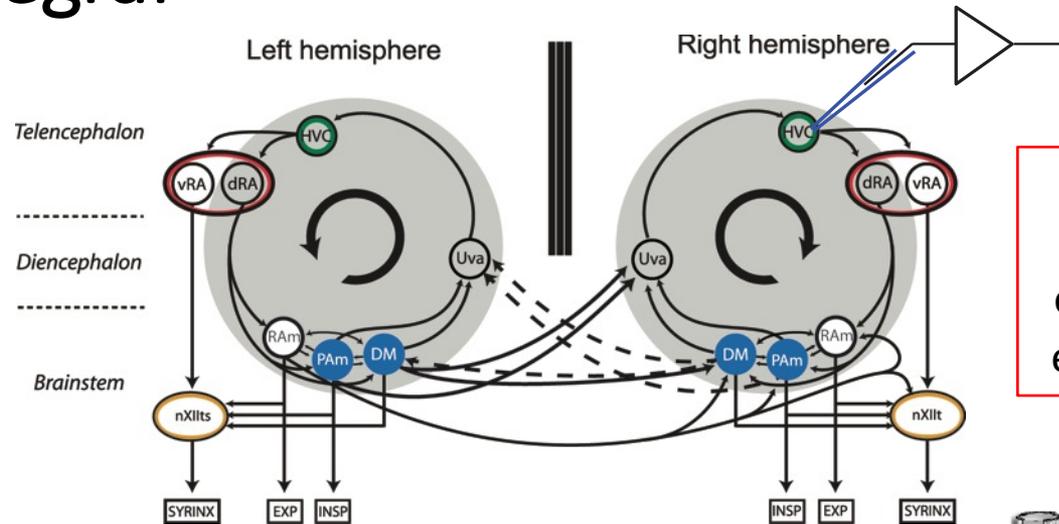






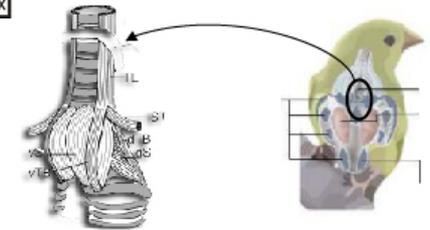
# Modelo Integral

Modelado matemático del Sistema del canto



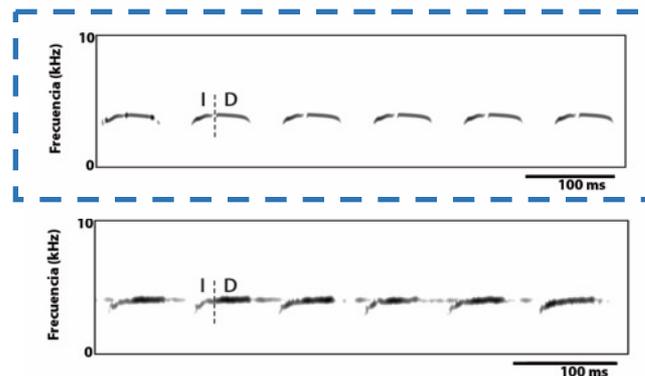
Medición de actividad electrofisiológica en el núcleo HVC

Generación de patrones motores comparables a experimentales

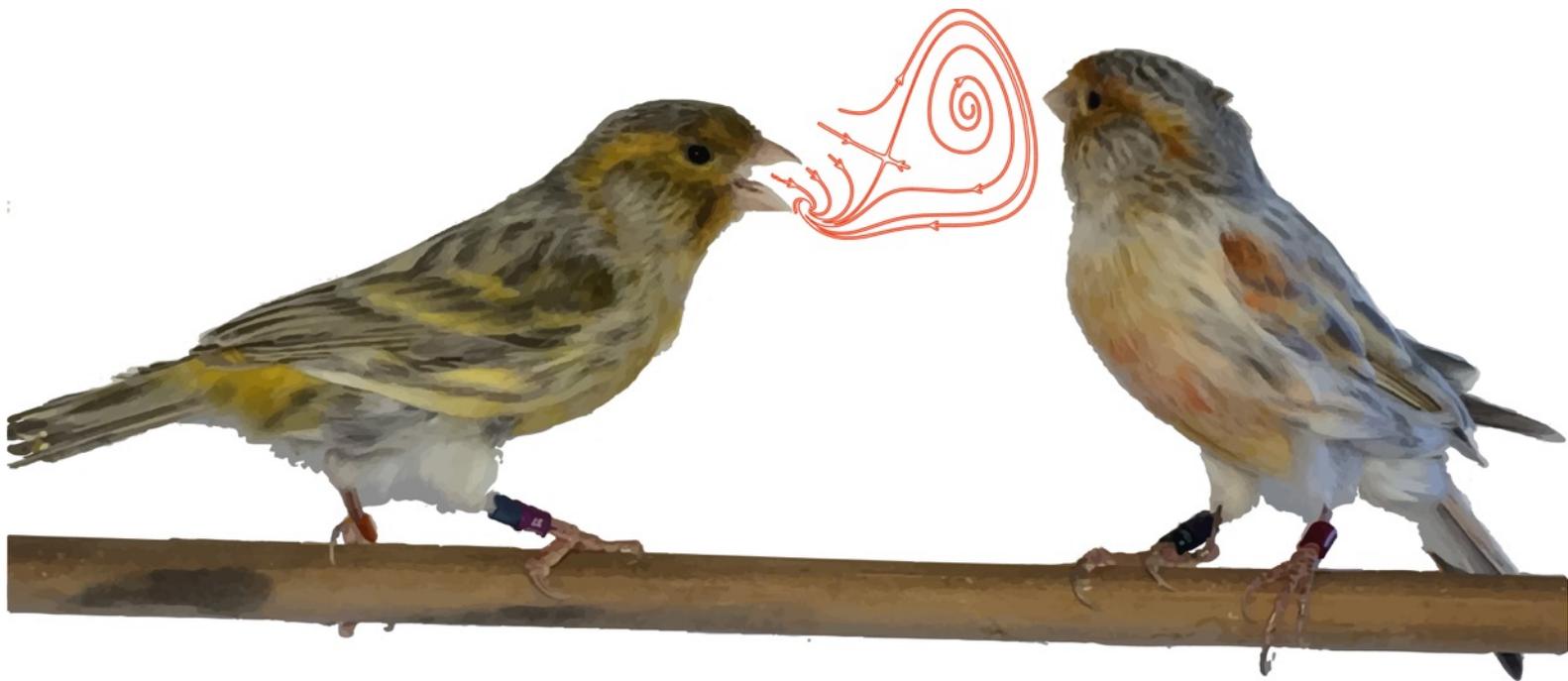


Modelado de la biomecánica

Síntesis de canto



Medición de presión de los sacos aéreos y actividad muscular



**¡Muchas Gracias!**



**Dr. Gabriel B. Mindlin**  
Dr. Marcos A. Trevisan  
Dr. Ana Amador  
Lic. Santiago Boari  
Lic. Germán Dima  
Dr. Cecilia Jarne

Med. Vet. Maria de los  
Angeles Suarez  
Dr. Franz Goller  
Dr. Jorge Alliende  
Lic. Nicolás Adreani