

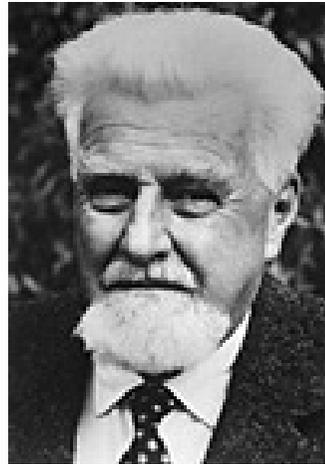
BIENESTAR ANIMAL

Madrid 29/11/06

ETOLOGÍA



Karl von Frisch



Konrad Lorenz



Nikolaas Tinbergen

© 2003 The Nobel Foundation

Premio Nobel en Fisiología o Medicina, 1973

“por sus descubrimientos sobre la organización de patrones de comportamiento individuales y sociales”

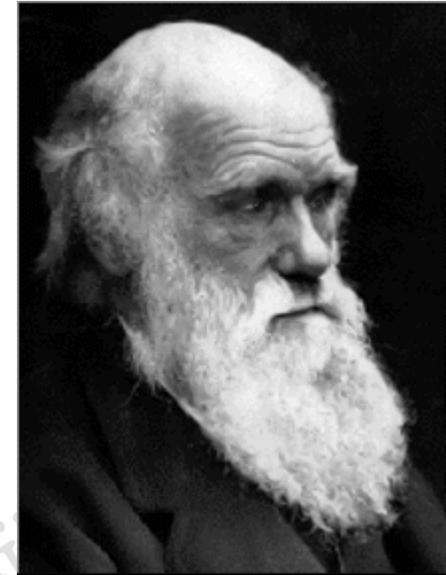


ETOLOGÍA

Comportamiento:
selección natural
selección sexual

Causas próximas
inmediato
funcional

Causas últimas
evolutivo
origines



www2.lucidacafe.com/

¿Como funciona?

¿Porque funciona?



ESPECIES MODELO

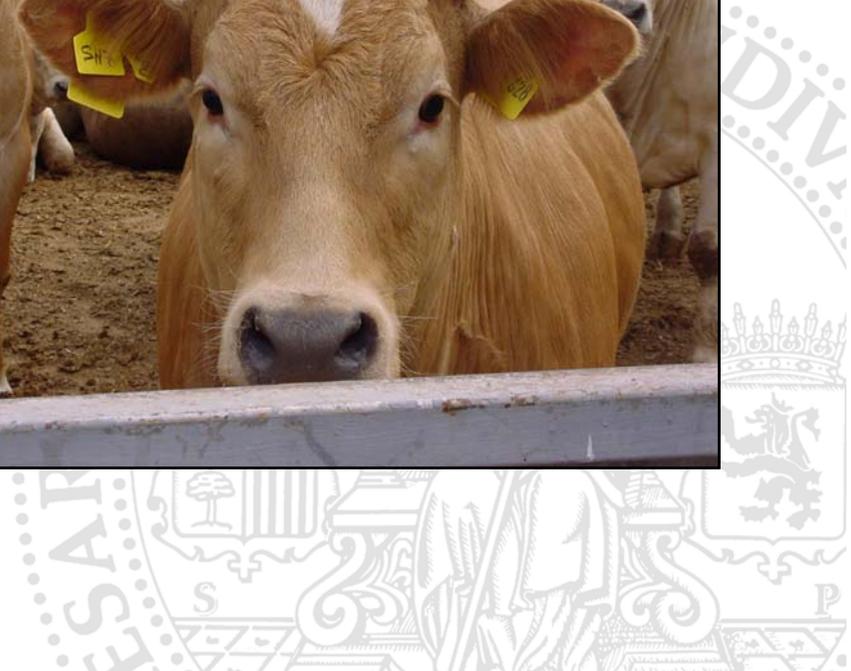
Ovino
materno-filial

Aves
vigilancia

Bovino
alimentación



M. Villarroel



ETOLOGÍA

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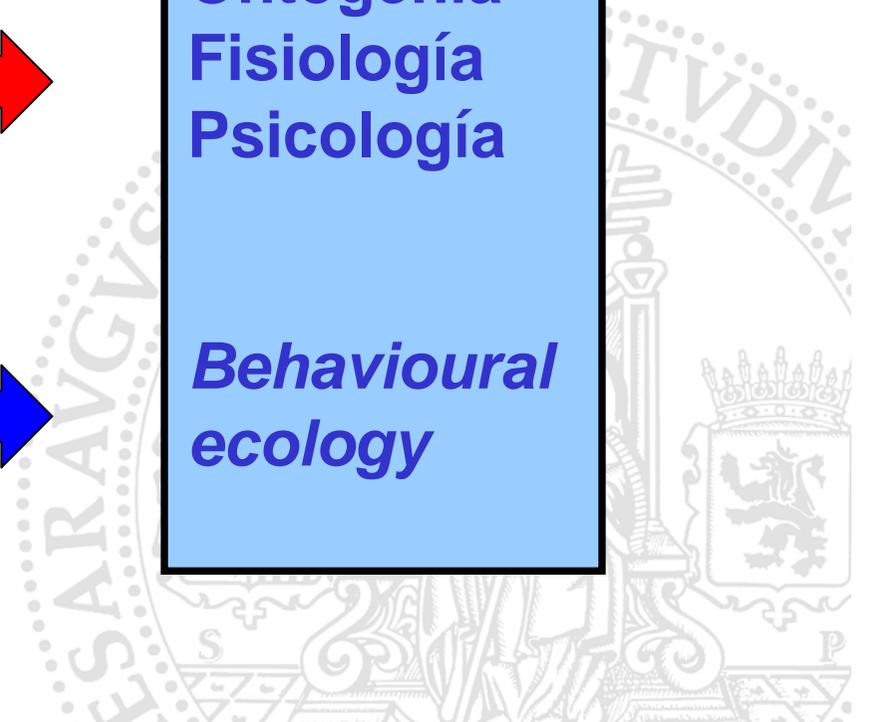


Causas últimas
evolutivo
origines



Genética
Ontogenia
Fisiología
Psicología

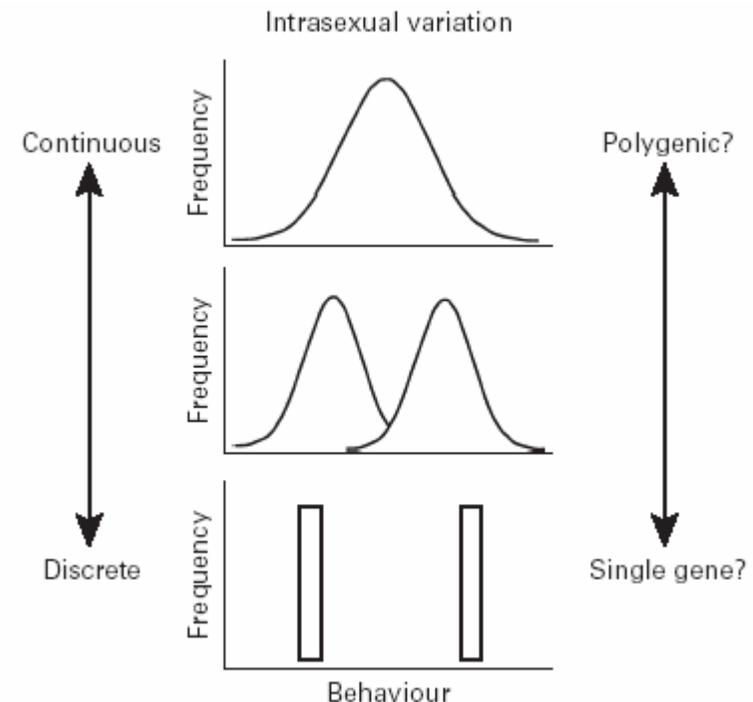
*Behavioural
ecology*



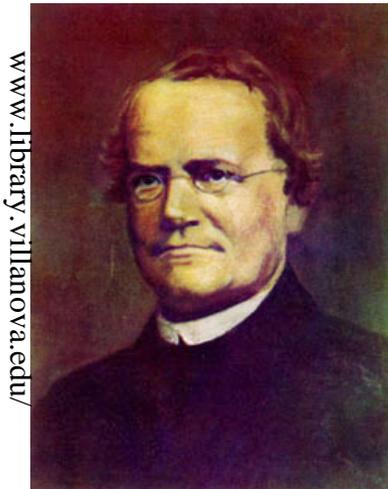
GENÉTICA ONTOGENIA FISILOGIA PSICOLOGIA

Influencia de la genética sobre diferencias entre individuos

- Neurología
- Endocrinología
- Comportamientos innatos



GENÉTICA ONTOGENIA FISILOGIA PSICOLOGIA



Gregor Mendel (1822-1884)

www.library.villanova.edu/

ONLINE MENDELIAN INHERITANCE IN ANIMALS (OMIA)

compiled by F.W. Nicholas

Reprogen, Faculty of Veterinary Science, University of Sydney, NSW 2006, Australia. email: frankn@vetsci.usyd.edu.au

Latest update: 15th Jan 2003

[SEARCH THE ENTIRE DATABASE](#)

SUMMARY OF DATABASE CONTENTS FOR MAJOR SPECIES

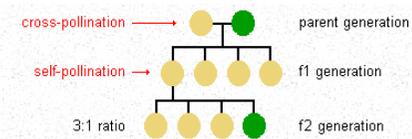
	Cat	Cattle	Chicken	Dog	Emu	Fox	Goat	Horse	Pig	Quail	Rabbit	Sheep	Turkey	TOTAL
Disorders/traits	263	357	174	451	4	5	66	183	203	34	48	179	28	1995
Single-locus disorders/traits	38	56	63	100	2	3	8	25	33	19	12	59	8	426
Disorders/traits for which the causative mutation has been identified at the DNA level	7	26	10	35	1	2	5	7	10	2	3	8	1	117
Potential animal models for a human disorder	123	117	34	207	2	3	24	85	65	9	27	62	3	761

[List of all 206 species in the database](#) [Genetic map references \(by species\)](#)

Examples of how to format search queries for items on these lists are available [here](#).

[Disorders/traits with a known gene/peptide](#) [Inborn errors of metabolism](#) [Lysosomal storage diseases](#) [Inherited bleeding disorders](#)

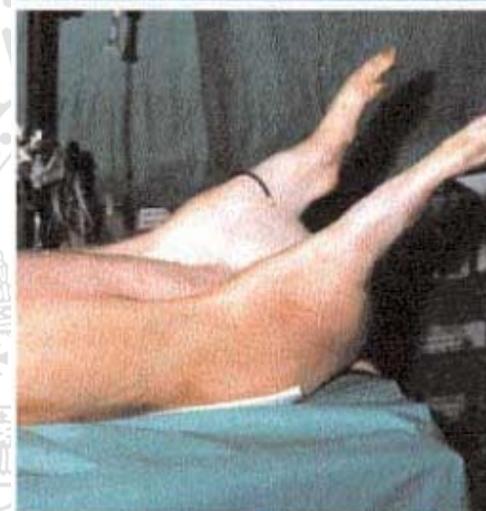
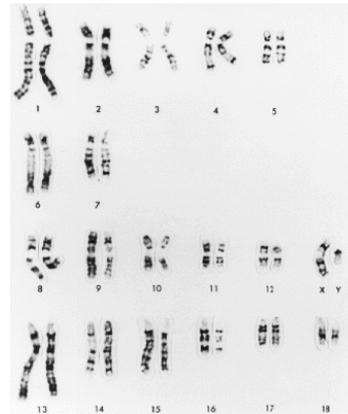
[Congenital heart diseases](#) [Dwarfism](#)



morgan.angis.su.oz.au/Databases/BIRX/omia/

PIG STRESS SYNDROME

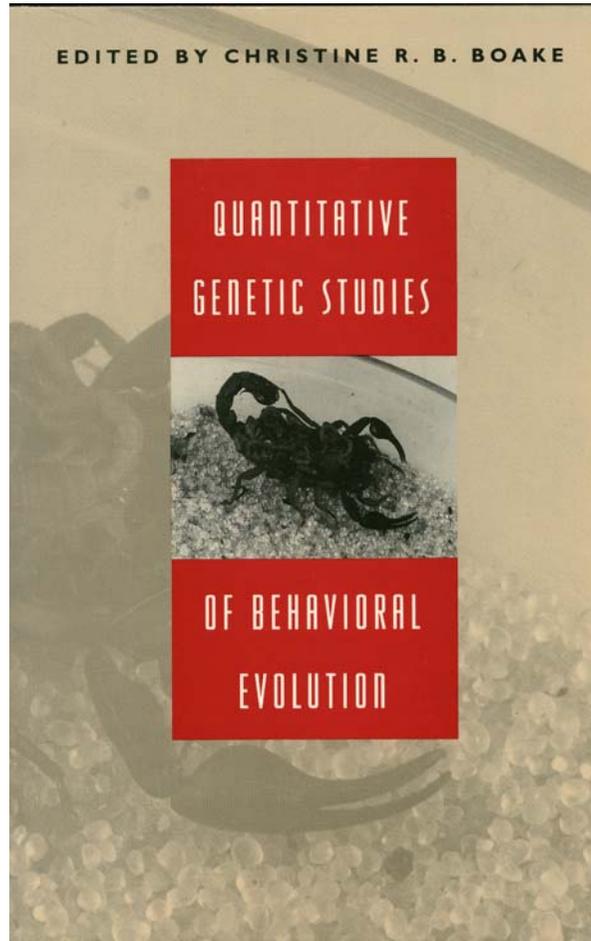
GENETICA ONTOGENIA FISIOLOGIA PSICOLOGIA



- Hypertermia maligna
- Cromosoma 6
 - sustitución C/T
- Carne PSE

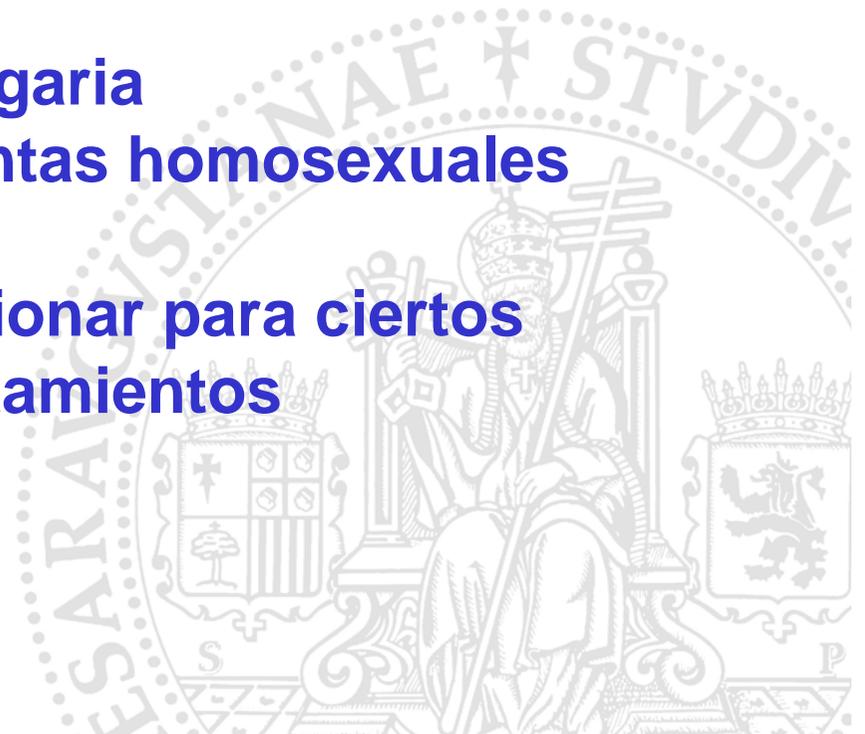
GENETICA CUANTITATIVA

GENETICA ONTOGENIA FISIOLOGIA PSICOLOGIA



La influencia de la actividad coordinada de los productos (proteínas) de varios genes

- Razas
 - Gregaria
 - montas homosexuales
- Seleccionar para ciertos comportamientos



LECHONES CLÓNICOS

GENÉTICA ONTOGENIA FISIOLÓGICA PSICOLOGÍA

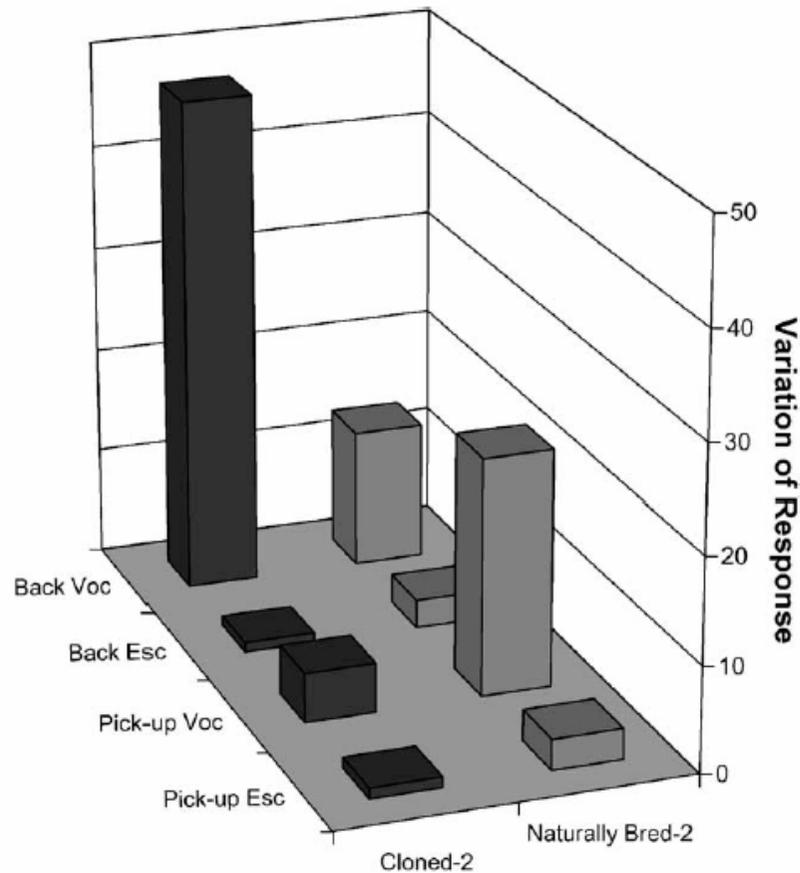


Fig. 3. Individual litter variation in responses during the Back and Pick-up tests. There were no differences in variation ($P > 0.05$).

- **Comportamiento alimentario**
- **Temperamento**
- **Uso del tiempo**

Archer, et al. 2003.
Behavioral variation among
cloned pigs.
AABS 82: 151-161.

ETOLOGÍA

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evolutivo
origines



Genética
Ontogenia
Fisiología
Psicología

Behavioural ecology



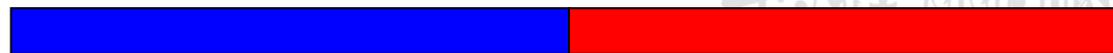
GENÉTICA ONTOGENIA FISILOGIA PSICOLOGIA

- **Imprinting**
 - factores internos y externos en etapas tempranas de la vida que afectan al comportamiento
- **Entornos empobrecidos**

nacimiento



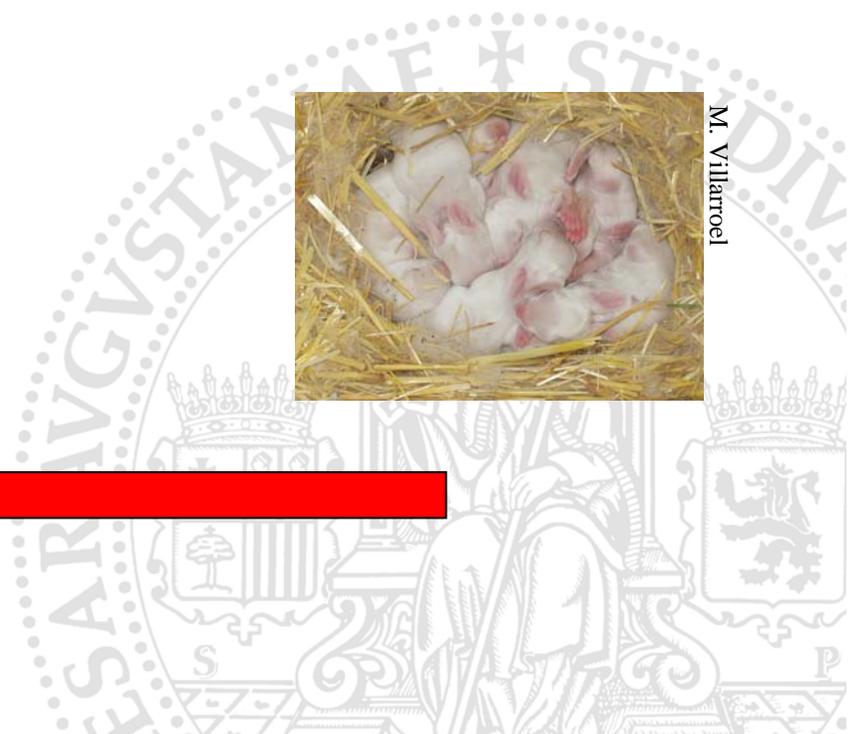
miedo



Periodo sensible



M. Villarroel



EFECTO SOCIAL

GENÉTICA ONTOGENIA FISIOLÓGICA PSICOLOGÍA

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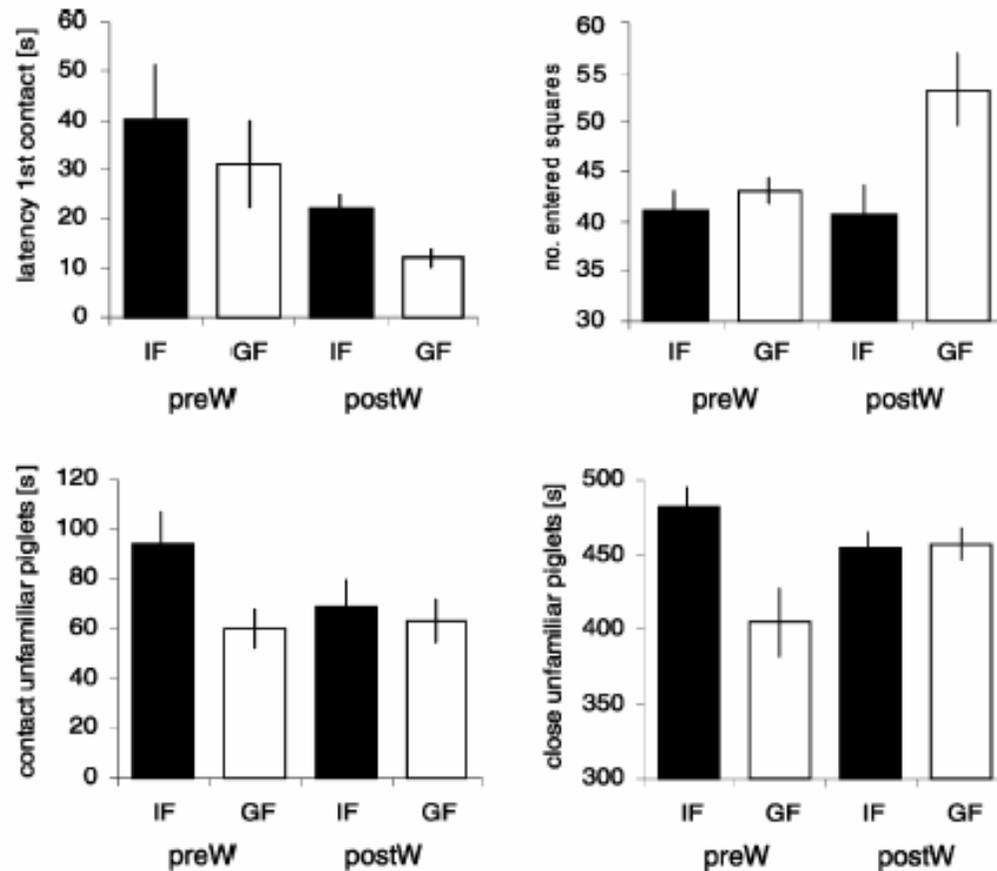
E. Hillmann et al./Applied Animal Behaviour Science 81 (2003) 99–109

Fig. 2. Mean values (\pm S.E.M.) of the behavioural parameters of IF-piglets (black bars) and GF-piglets (white bars) in the social encounter test performed 2 days before (preW) and 2–3 days after (postW) weaning.

Antes/después del destete:

- social vs. individ.
- social
- uso del tiempo

Hillman, E. et al. 2003.

Farrowing conditions affect the reactions of piglets towards novel environment and social confrontation at weaning.

AABS, 81: 99-109.

EFFECTO SOCIAL

GENÉTICA ONTOGENIA FISILOGIA PSICOLOGIA

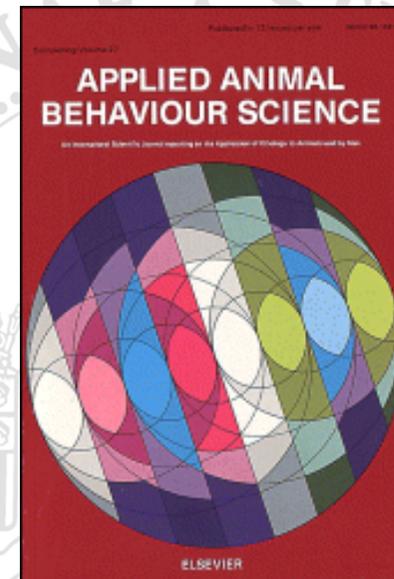
Ovejas

- **presencia visual de la madre impide un vínculo con cuidador**

Boivin, X., et al. 2002. Maternal presence limits the effects of early bottle feeding and petting on lambs' socialization. *Applied Animal Behaviour Science* 77: 311-328

Perdices

- **impronta negativo para producción**



GENÉTICA ONTOGENIA FISIOLÓGICA PSICOLOGÍA

- **Comportamientos de mantenimiento**

- alimentación
- exploratorio
- locomotor
- sueño



M. Villarroya

- **Comportamiento reproductivo**

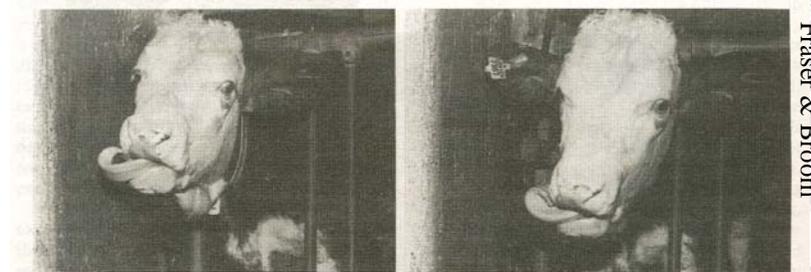
- libido
- montas
- lactación



M. Villarroya

- **Comportamientos anormales**

- estereotipos



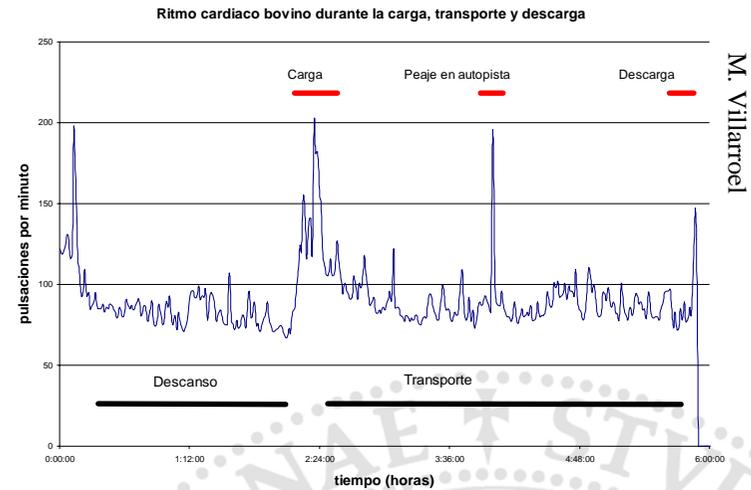
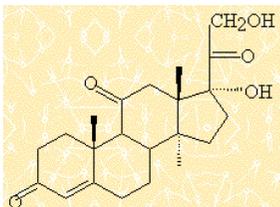
Fraser & Broom

ESTUDIOS FISIOLÓGICOS

GENÉTICA ONTOGENIA FISIOLOGIA PSICOLOGIA

Indicadores

- frecuencia cardiaca
- componentes sanguíneos
 - glucosa
 - NEFA
 - linfocitos
- corticoides plasmáticos



ALIMENTACION-COMPORTAMIENTO

GENÉTICA ONTOGENIA FISILOGIA PSICOLOGIA

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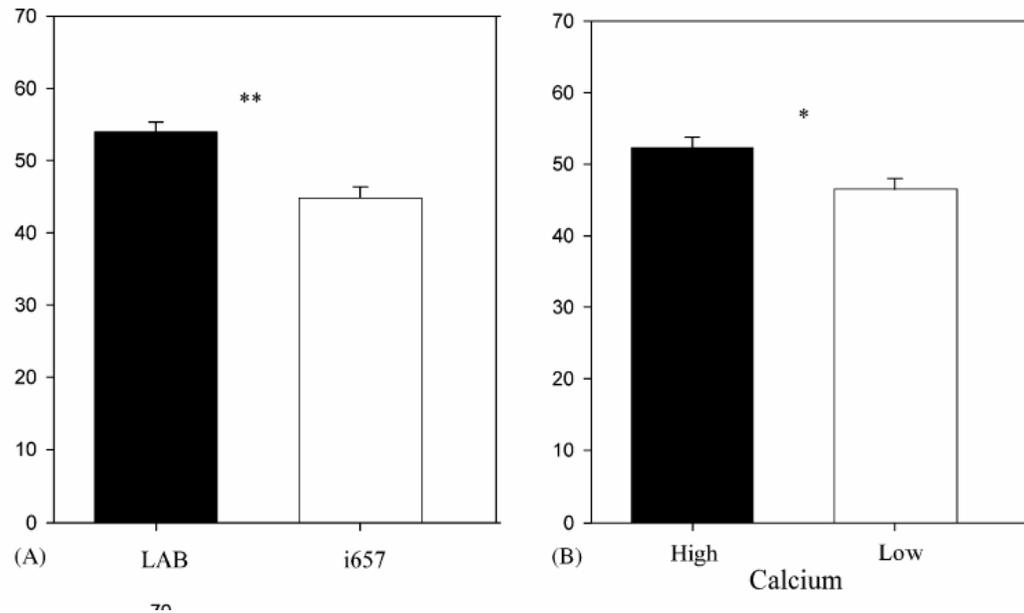
J.W. Christensen et al. / Applied Animal Behaviour Science 82 (2003) 229–240

Fig. 3. Percentage (\pm S.E.) of outside chickens foraging in relation to (A) (** indicates $P < 0.01$); (B) feed type

Niveles de calcio

- < 3% incrementa exploración

- 30%
 - menos exploración
 - menos ingesta
 - menos crecimiento

Christensen et al. 2003.

Effects of calcium deficiency in broilers on the use of outdoor areas, foraging activity and production parameters. AABS 82: 229.240.

ENDOCRINOLOGÍA- COMPORTAMIENTO

GENÉTICA ONTOGENIA FISIOLÓGICA PSICOLOGÍA

36

S. McGary et al. / *Applied Animal Behaviour Science* 82 (2003) 29–44

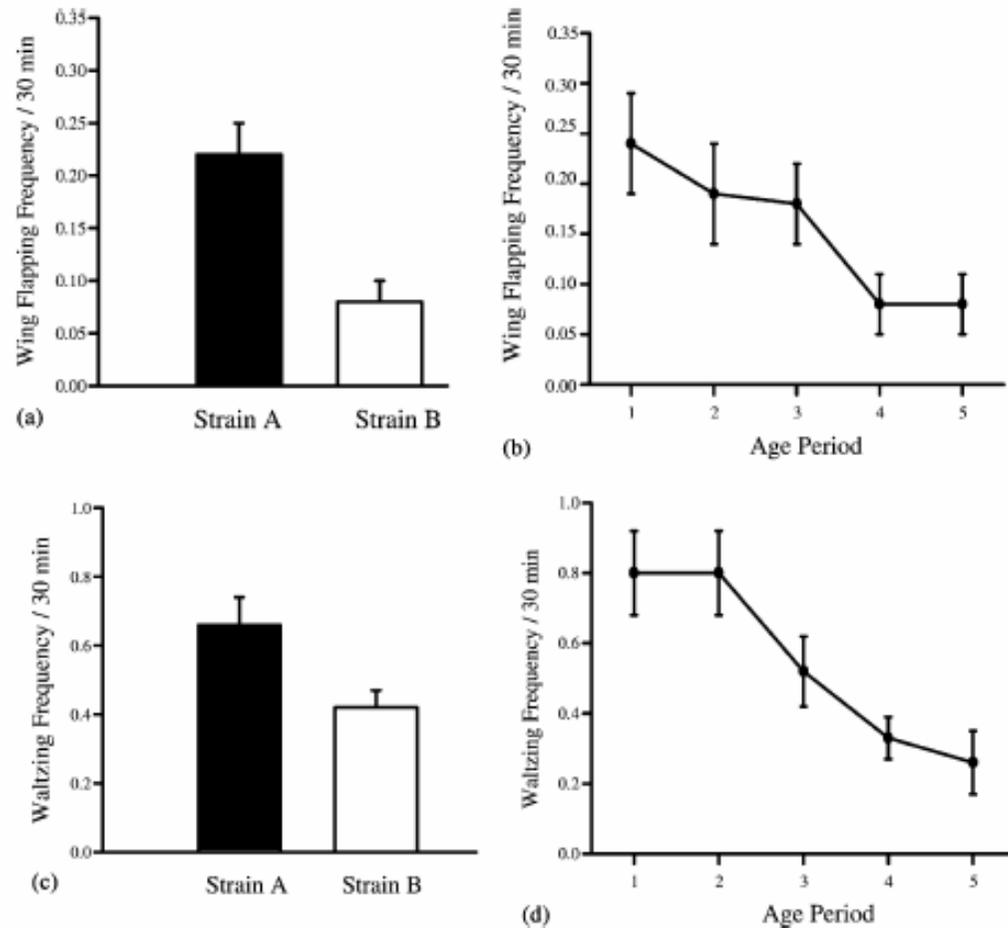


Fig. 1. (a) Strain effect and (b) age effect for wing flapping (mean \pm S.E.), and (c) strain effect and (d) age effect for waltzing (mean \pm S.E.) for Strains A and B.

Frecuencia de comportamientos reproductivos según niveles de andrógenos

**Strain a: más andro
más activo
Strain b: + fert**

McGary, et al. 2003.
Reproductive and aggressive behavior in male broiler breeders with varying fertility levels. *AABS*, 82:29.44.

ESTEREOTIPOS

GENÉTICA ONTOGENIA FISIOLÓGICA PSICOLOGÍA

- Secuencias de movimientos repetidas con muy poca variación, sin un sentido aparente y normalmente debido a la falta de estímulo(s)



Fig. 32.2 Anomalous oral behaviour in swine. Top left: bar-chewing. Top right: sham-chewing. Bottom left: anal nosing and coprophagia. Bottom right: bar-whetting (photographs by H.H. Sambraus).

		ESTÍMULO	
		Presente	Ausente
MOTIVACIÓN*	Adquirir	Atracción	Privación
	Evitar	Aversión	Apaciguar

*basado en Phillpis y Piggins, 1992
Farm animals and the environment. CABI

GENÉTICA ONTOGENIA FISIOLÓGIA PSICOLOGÍA

- Cognición animal
- Memoria
- Motivación
- Aversión/preferencias
- Aprendizaje asociativo (condicionamiento)
- Habitación

brief communications

Frustrations of fur-farmed mink

Mink may thrive in captivity but they miss having water to romp about in.

Animals may suffer in captivity if they are strongly motivated to perform activities that their housing does not permit. Here we investigate to what extent these limitations affect caged mink and find that these animals will not only pay high costs to be able to perform a range of natural behaviours, but they will also release the 'stress' hormone cortisol when prevented from indulging in swimming, their favourite activity. Despite arguments that mink housed in fur farms have successfully adapted to captivity, these animals may suffer by being deprived of resources that exist in the wild.

Fur farming is widespread in North America, Scandinavia and Europe, with some 30 million mink pelts being produced annually worldwide. On these farms, American mink (*Mustela vison*) are kept in wire-mesh cages (dimensions are typically $0.9 \times 0.4 \times 0.3$ m), with access provided to a single nest box, drinking water and paste-like food. It has been claimed that this causes frustration to the animals¹, which in the wild would patrol territories 1–4 km long, use several nest sites, and hunt by following scent trails, investigating burrows, and div-

Eight male and eight female mink were individually housed in closed-economy⁷ set-ups, each consisting of a conventional farm cage, plus seven similarly sized resource compartments. These compartments contained, respectively: a water pool measuring about $1.5 \text{ m} \times 0.5 \text{ m}$ and filled with 0.2 m water (Fig. 1); a raised platform, reached by a 2-m vertical wire tunnel; novel objects such as traffic cones and packaging, which were changed daily; an alternative nest site (a box of hay); toys for manipulation and chewing (tennis balls, for example); and a plastic tunnel. The seventh compartment was left empty to control for the importance of simply making extra space available. Costs to 'pay' to reach the new facilities were imposed by weighting one-way entrance doors by 0, 0.25, 0.5, 0.75, 1 or 1.25 kg for seven successive days.

The animals' activity in each compartment was automatically recorded throughout the day and night, allowing us to calculate four measures of value (Table 1). We found that the animals rated the water pool as the most valuable resource: it attracted the greatest total expenditure and had the highest reservation price, greatest



PREFERENCIAS

GENÉTICA ONTOGENIA FISIOLÓGICA PSICOLOGÍA

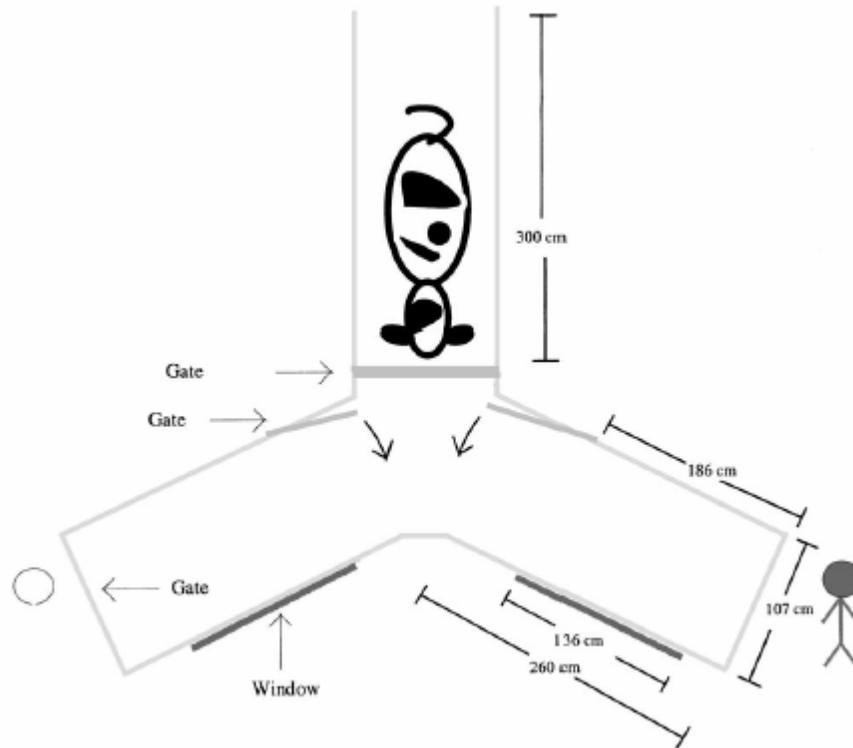


Fig. 1. Plan of Y-maze apparatus.

Test Y

- evitar gritos
- no prefiere/evita caricias, voz baja
- reconocimiento personas (por color ropa)

Pajor, E.A et al. 2003. Dairy cattle's choice of handling treatments in a Y-maze. AABS, 80: 93-107.

ETOLOGÍA

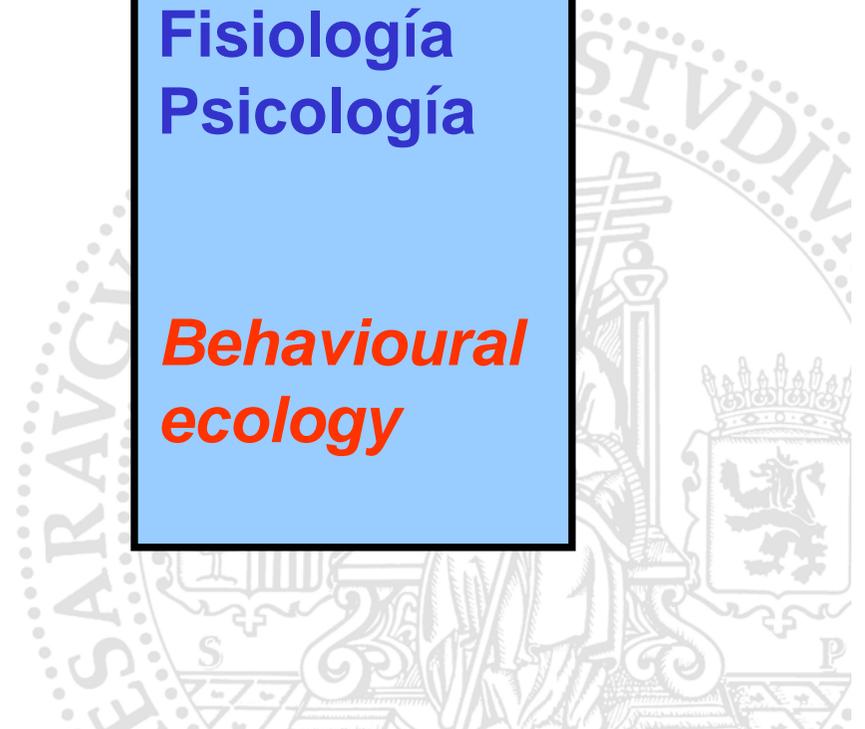
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selección sexual

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funcional

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evolutivo
origines

**Genética,
Ontogenia
Fisiología
Psicología**

***Behavioural
ecology***



ECOLOGÍA DEL COMPORTAMIENTO

Porque?

1. Explicar comportamientos en un contexto teórico

- valor hedónico de pensamiento para desarrollar estrategias de manejo que tomen en cuenta el comportamiento animal como variable fundamental.

2. Cambios en domesticación más cuantitativos que cualitativos

**Bienestar animal
social
ambiente**



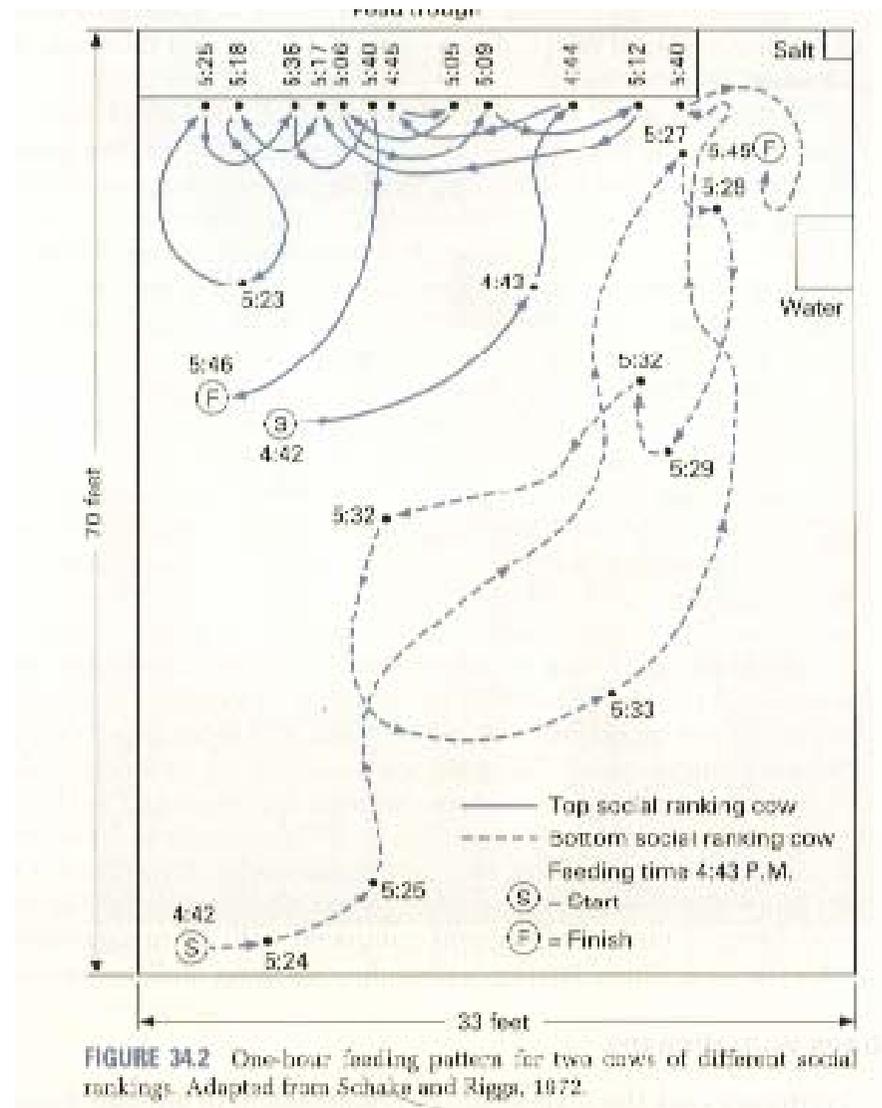
FACTOR SOCIAL

ECOLOGIA DEL COMPORTAMIENTO

Social

- ↑ densidad
competencia comida,
espacio, pareja
- cambios de grupo
estructura, jerarquía

Taylor, RE & Field, TG. 1998.
Scientific Animal Production
Prentice Hall.



USO DEL ESPACIO

ECOLOGIA DEL COMPORTAMIENTO

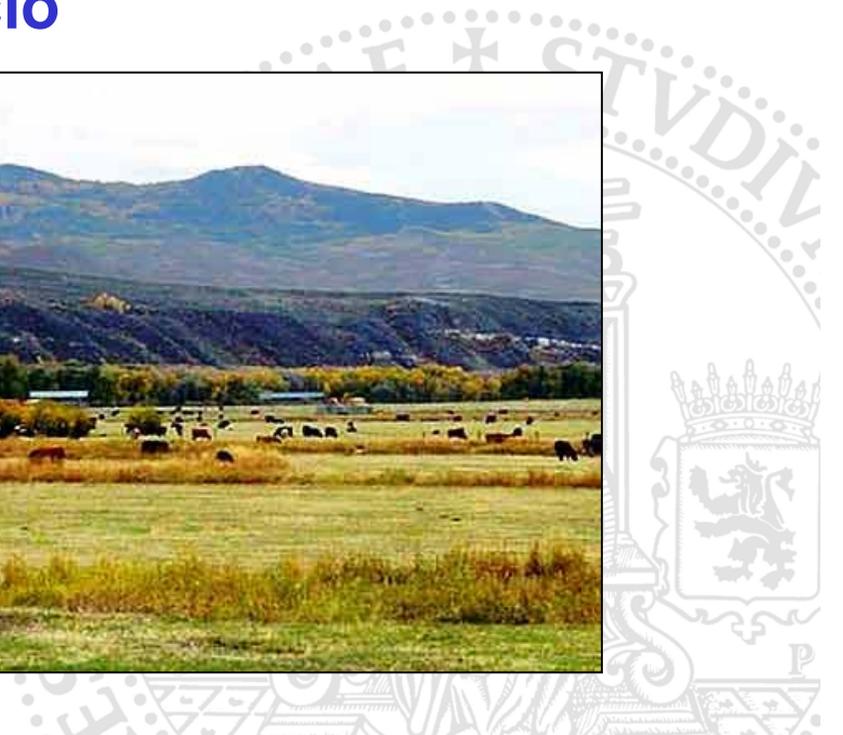
Espacio- Territorio

Uso ambiente

Ritmos diarios y estacionales

Comportamiento contra predadores

Comportamiento alimenticio

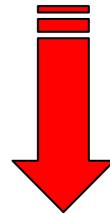


ELECCIÓN DE ALIMENTOS

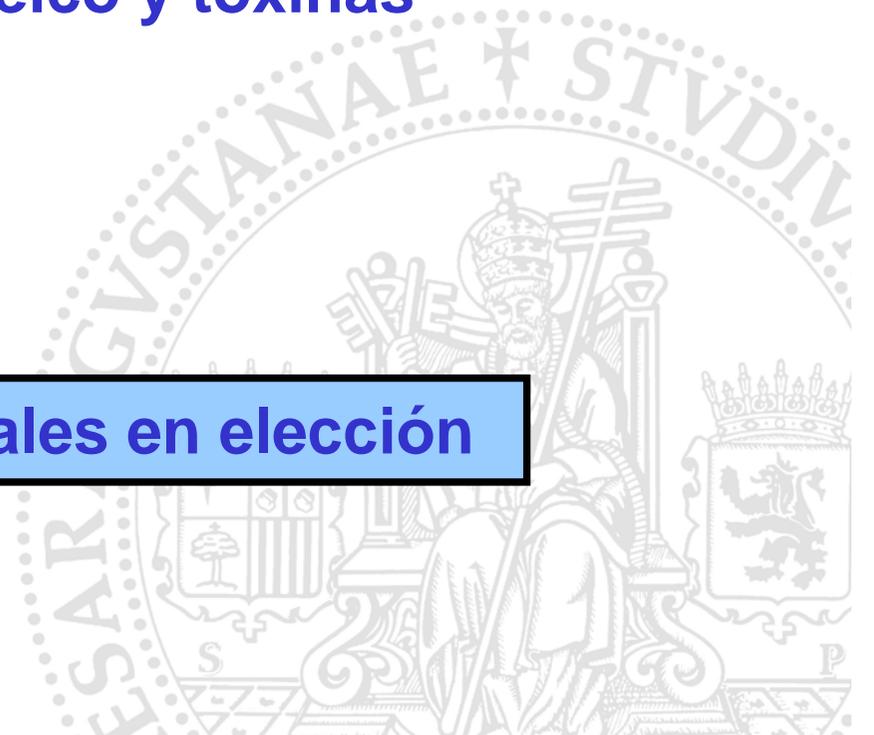
ECOLOGIA DEL COMPORTAMIENTO

Rumiantes tiene una dieta variada

- **disponibilidad de pastos**
- **elección de comida**
- **contenido energético, proteico y toxinas**



Mecanismos conductuales en elección



SOFISTICACIÓN DE RECONOCIMIENTO

ECOLOGIA DEL COMPORTAMIENTO

Grado de sofisticación de reconocimiento

- Maximizar tasa de ingestión
- Selección de nutrientes complementarios
- Evitación de toxinas
- Sustancias con consecuencias adversas/beneficiosas (taninos)

Integración de información
rumiantes: disociado por rumen
comparar monogástricos



ETOLOGÍA- RESUMEN

Genética

- porcino y clones

Ontogenia

- cerdos, alojamientos, ovino

Fisiología

- aves, bovino, porcino

Psicología

- visión, bovino

Ecología del comportamiento

- rumiantes

