



Katedry genetiky a biochémie  
Prírodovedeckej fakulty Univerzity Komenského  
v spolupráci so  
Slovenskou spoločnosťou pre biochémiu a molekulárnu biológiu

**Vás pozývajú na 52. prednášku v rámci Kuželových seminárov:**

**Dr. Boris Bilčík**

Ústav biochémie a genetiky SAV



**Who is the father?**

**(Mating strategies and reproductive success in broiler breeders)**

ktorá sa uskutoční 11. novembra 2005 (piatok) o 14:00  
v knižnici Katedry genetiky Prírodovedeckej fakulty UK

## Dr. Boris Bilčík

1989 - MSc., Comenius University, Faculty of Sciences, Molecular Biology and Genetics

2000 - PhD., Department of Animal Environment and Health, Swedish University of Agricultural Sciences, Skara

### Research and academic positions:

1989- to present - Slovak Academy of Sciences, Institute of Animal Biochemistry and Genetics, Department of Endocrinology and Ethology, Ivanka pri Dunaji, Slovak Republic

1991 - INRA, Station de Recherches Avicoles, Nouzilly, France

1992-1993 - University Hohenheim, Institute for Animal Husbandry and Breeding, Stuttgart, Germany

1995-1996 - Swedish University of Agricultural Sciences, Department of Animal Environment and Health, Skara, Sweden

1996-2000 - PhD at the Swedish University of Agricultural Sciences, Department of Animal Environment and Health, Skara, Sweden

2001-2005 - Post-doctoral Fellow, Department of Animal and Avian Sciences, University of Maryland, College Park, Maryland, USA

Modern broiler strains reach 1500g body weight in 33 days, compared to 120 days needed in 1925. Such intensive genetic selection, however, brought an unwanted byproduct in the form of decreased fertility. Whether behavior, morphometrical characteristics or sperm quality can be used to assess reproductive potential of broiler breeder males,



and what strategy is used by males to promote their genes, was the aim of our studies. Reproductive success in domestic and red jungle fowl depends on different factors such as dominance status, mating behavior frequency, intensity of courtship behavior, time of mating or level of sperm competition. As the level of male–male competition increases, males can use different behavioral strategies to outperform other males. In addition, considering sperm competition and last male precedence theory, males in highly competitive environments are predicted to mate at higher frequencies to out-compete the sperm inseminated by the preceding male. Differential reproductive success due to sperm competition has already been reported in poultry, however, only under artificial insemination conditions. Paternity of offspring in multiple male

groups or after artificial insemination with pooled sperm can be successfully determined by DNA fingerprinting. Based on individual differences in highly polymorphic microsatellite sequences, other authors found that disproportionately more progeny is sired by males with high sperm mobility. Our results suggest, that under natural mating condition, reproductive success is affected by interaction of multiple factors and contrary to our prediction, mating behavior can not be used as a reliable selection marker.

### List of selected publications:

Bilcik B., Estevez I., 2005. Impact of male–male competition and morphological traits on mating strategies and reproductive success in broiler breeders. *Applied Animal Behaviour Science* 92, 307-323.

Bilcik B., Russek-Cohen, E., Estevez I., 2005. Reproductive Success of Broiler Breeders in Natural Mating Systems: The Effect of Male-Male Competition, Sperm Quality and Morphological Characteristics. *Poultry Science* 84, 1453–1462.

Sedlačková M., Bilčík B., Košťál E., 2004. Feather Pecking in Laying Hens: Environmental and Endogenous Factors. *Acta Vet. Brno* 73, 521-531.

Bilcik, B., Kostal, L., Estevez, I., 2003. Use of telemetry system for measurement of blood pressure, heart rate and activity in the domestic fowl. In: Proceedings of Data Sciences International Telemetry User Group Symposium, USA, October 8, 2003 Silver Spring, Maryland, p.8.

Bilcik B., Keeling L.J., 2000. Relationship between feather pecking and ground pecking in laying hens and the effect of group size. *Applied Animal Behaviour Science*, 68, 55-66.

Bilcik B., Keeling L.J., 1999. Changes in feather condition in relation to feather pecking activity and aggressive behaviour in laying hens. *British Poultry Science* 40, 444-451.