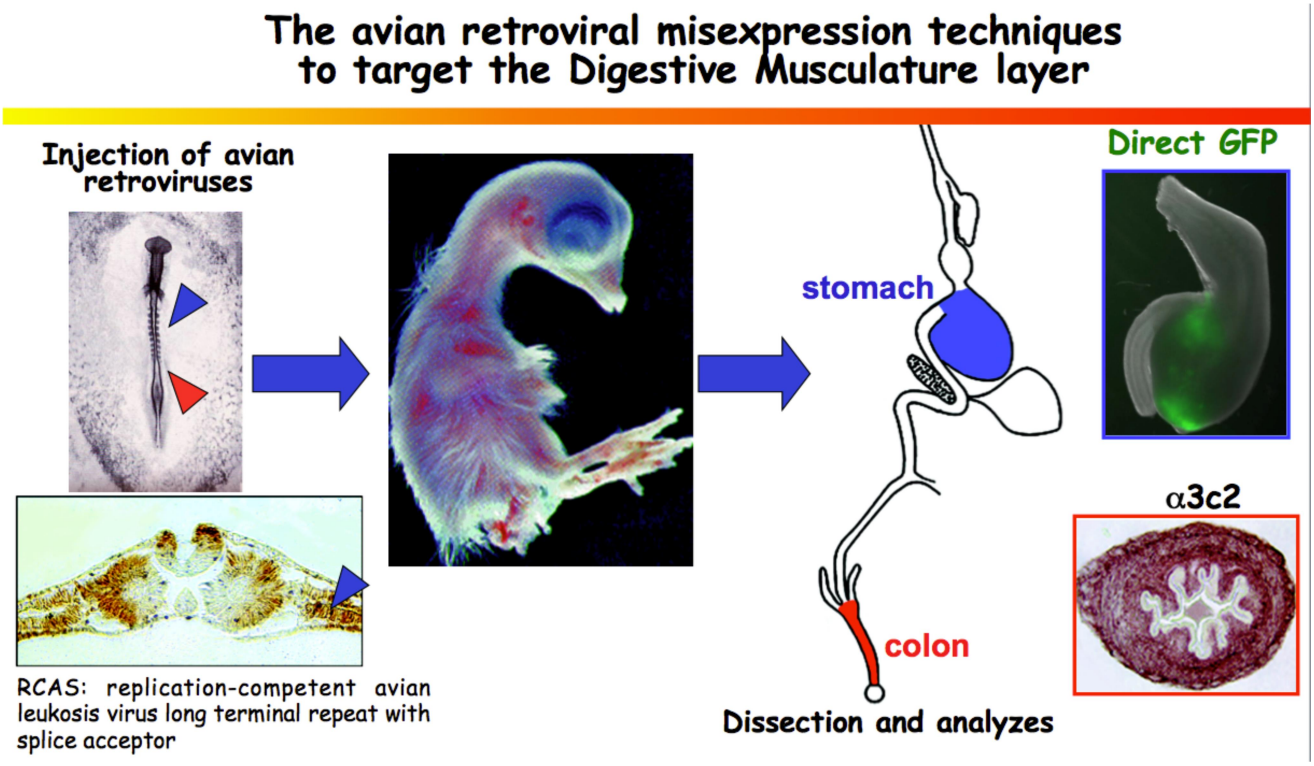
Avian retroviral transgenesis approaches: gain & loss of function

Pascal De SANTA BARBARA,

PhyMedExp, INSERM U1046, UMR CNRS 9214, 371 avenue Doyen Giraud, Montpellier, FRANCE
pascal.de-santa-barbara@inserm.fr, (+33) 467 415 234

SUMMARY :
The embryonic chick provides an excellent model system for studies of developmental biology. RCAS (Replication Competent ALV LTR with a Splice acceptor) is a replication-competent retroviral vector system that allows in ovo sustained misexpression of a gene of interest in avian cells. RCAS is a modified version of an avian Rous sarcoma virus and this tool has been used to gain- and loss-of-function approaches to identify key signaling pathways and factors involved into organ and tissular development. Moreover these approaches are now widely used in cell biology. Advantages and limitations of the RCAS approaches will be discussed.

ILLUSTRATRION :



KEYWORDS
chick model in ovo transgenesis morphogenesis pathophysiology

REFERENCES

McKey at al. **2016**. LIX1 regulates YAP1 activity and controls the proliferation and differentiation of stomach mesenchymal progenitors. ***BMC Biol***. 14:34.
Sagnol et al. **2016**. Epithelial Splicing Regulatory Protein 1 (ESRP1) is a new regulator of stomach smooth muscle development and plasticity. ***Dev Biol***. 414(2):207-18.
Faure et al. **2015**. Enteric Neural Crest Cells Regulate Vertebrate Stomach Patterning and Differentiation. ***Development***.142(2):331-42.
Sagnol et al. **2014**. Homodimerization of RBPMS2 through a new RRM-interaction motif is necessary to control smooth muscle plasticity. ***Nucleic Acids Res***. 42(15):10173-84.
Roig et al. **2014**. Environmental concentration of nonylphenol alters the development of urogenital and visceral organs in avian model. ***Environ Int***. 62, 78-85.
Notarnicola et al. **2012**. The RNA binding protein RBPMS2 regulates gastrointestinal smooth muscle development.***Gastroenterology***. 143,687-97.
Morgan et al. **1992**. Targeted misexpression of Hox-4.6 in the avian limb bud causes apparent homeotic transformations. ***Nature***. 1992 Jul 16;358(6383):236-9.
Hughes et al. **1987**. Adaptor plasmids simplify the insertion of foreign DNA into helper-independent retroviral vectors. ***J Virol.*** 61(10):3004-12