

EMC, EDC

(NL)

Research topics:	<p>The relevant broader research topic for this program is the molecular biology and evolution of (respiratory) viruses in humans and animals including genetic and phenotypic properties required for airborne transmission. These models are offered for TNA.</p> <p>Some key publications on the topic:</p> <p>2014. Cell 157(2): 329-339 M. Linster, S. van Boheemen, M. de Graaf, E. J. Schrauwen, P. Lexmond, B. Manz, T. M. Bestebroer, J. Baumann, D. van Riel, G. F. Rimmelzwaan, A. D. Osterhaus, M. Matrosovich, R. A. Fouchier and S. Herfst. Identification, characterization, and natural selection of mutations driving airborne transmission of A/H5N1 virus.</p> <p>2013. Nature 501(7468): 560-563 M. Richard, E. J. Schrauwen, M. de Graaf, T. M. Bestebroer, M. I. Spronken, S. van Boheemen, D. de Meulder, P. Lexmond, M. Linster, S. Herfst, D. J. Smith, J. M. van den Brand, D. F. Burke, T. Kuiken, G. F. Rimmelzwaan, A. D. Osterhaus and R. A. Fouchier. Limited airborne transmission of H7N9 influenza A virus between ferrets.</p> <p>2012. Science 336(6088): 1534-1541 S. Herfst, E. J. Schrauwen, M. Linster, S. Chutinimitkul, E. de Wit, V. J. Munster, E. M. Sorrell, T. M. Bestebroer, D. F. Burke, D. J. Smith, G. F. Rimmelzwaan, A. D. Osterhaus and R. A. Fouchier. Airborne transmission of influenza A/H5N1 virus between ferrets.</p> <p>2012. Science 336(6088): 1541-1547 C. A. Russell, J. M. Fonville, A. E. Brown, D. F. Burke, D. L. Smith, S. L. James, S. Herfst, S. van Boheemen, M. Linster, E. J. Schrauwen, L. Katzelnick, A. Mosterin, T. Kuiken, E. Maher, G. Neumann, A. D. Osterhaus, Y. Kawaoka, R. A. Fouchier and D. J. Smith. The potential for respiratory droplet-transmissible A/H5N1 influenza virus to evolve in a mammalian host.</p> <p>2009. Science 325(5939): 481-483 V. J. Munster, E. de Wit, J. M. van den Brand, S. Herfst, E. J.</p>
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	<p>Schrauwen, T. M. Bestebroer, D. van de Vijver, C. A. Boucher, M. Koopmans, G. F. Rimmelzwaan, T. Kuiken, A. D. Osterhaus and R. A. Fouchier. Pathogenesis and transmission of swine-origin 2009 A(H1N1) influenza virus in ferrets.</p>
<p>Activities and services currently offered by the infrastructure/installation:</p>	<p>The BSL3 facility (800m²) permits experiments using class III Biosafety cabinets, at 4 stepwise reduced air pressure levels to warrant inward airflow. It features (redundantly) filtered HVAC systems, air-locks, double-door autoclaves and a central fumigation system. In total, 12 Class-III BSC (two rooms of 180 m² each) accommodate studies with laboratory animal species such as ferrets and four labs (total 220 m²) hold 23 class III BSC for small animals (e.g., 2700 mice). The holding rooms accommodate some related laboratory equipment and three separate labs accommodate the processing, safe storage and analysis of samples (total 173 m²).</p> <p>Supplementary facilities to work at conventional or SPF-standards are provided at the EDC and include a transgenic facility and a wide spectrum of facilities for the study of small rodents, fish, birds and larger animals with research modalities such as multimodal bioimaging (MRI, SPECT/CT, ultrasound, optical), high-level radiation containment, (micro)surgery etc. The virology department develops and runs assays in molecular biology, virology, viral genetics, etc.</p>
<p>Description of the access to be provided under VetBioNet TNA call:</p>	<p>The typical experimental setup consists of a pair of donor/recipient animals in a customized housing system allowing for airborne transmission only. A study will typically last 3 – 4 weeks. On average each user or user group is expected to be accommodated up to 30 days at the infrastructure. EMC will perform the in life phase of the study in collaboration with the user. EMC will allow access to the facility prior to and during the studies as needed and as far as possible in view of biosafety/biosecurity requirements (access fee covers background</p>

	<p>screen, and safety training is included). The unit of access is defined as one airborne transmission experiment between 2 independent donor/recipient ferret pairs. One typical access consists of 4 units of access EMC will prepare and provide the necessary legal approvals, including the ethical review and a study plan, which will be signed by the user prior to the start of the study. One unit includes the purchase of animals, housing and animal care and biotechnical expertise for administration and sampling as well as the minimal reagents to run a basic experiment for the assessment of airborne transmission. Applications for official permissions (import/export of pathogens, animal ethics documentation, etc.) will be also included in the service package. Biological samples will be analyzed at EMC and can be made available to the user for analysis outside EMC provided that all biosafety and biosecurity requirements can be met, including legal requirements such as special permits.</p>
Animal species/pathogens that can be worked on in this infrastructure/installation:	Relevant experiment that can be offered in the installation: Airborne transmission experiments with (recombinant) Influenza A viruses in ferrets.
Travel and subsistence costs:	(Detail the rules of the infrastructure/installation for reimbursement of travel and subsistence costs to applicants) There is a modest budget for travel/stay, amounting to 670 Euro per unit defined above.
Infrastructure/installation ethical rules:	Ethical review is required to acquire an animal use project license issued by the competent authority and individual studies and animal use will be overseen by the institutional animal welfare body. All work will be done in compliance with relevant regulations and permissions.