University of Barcelona

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BIOGARAPHY

His main research interest are persistence of animal and human viruses in the environment, with particular attention to water, fomites and foods, and the inactivation and removal procedures for assuring the viral safety of blood derivatives, cosmetics and foods, and, also, bio containment and biosafety issues in microbiological research laboratories, among others. He has written more than 30 papers in international journals and 6 book chapters. The spreading of his work has been, also, achieved through more than 50 oral or poster communications, mainly, in international congresses or symposia. In the last seven years he has became the person in charge on biosafety management in Centre de Recerca en Sanitat Animal (CReSA), managing 500 m2 BSL3 laboratory areas (in a whole Biocontainment Unit constituted of three floors of 1500 m2 each one), and from 18 months ago, he also took the management of CReSA BSL2 laboratories.

Biosafety, quality and viral inactivation

Xavier Abad Morejón de Girón

PhD in Biological Sciences

BSL2/BSL3 Laboratory Manager

Biosafety Officer

Main fields of interest

- Environmental virology.
- Viral inactivation procedures. Validation and standardization. Application to biosafety standard protocols.
- Application of quality tools in the management of a biosafety facility.

Main fields of interest

- Environmental virology (in stand by)
  - Persistence of virus on waters
  - Persistence of virus on fomites
  - Environmental microbial activity with virucidal properties.

- Abad, F.X., Pintó, R.M., and Bosch, A. 1994. Survival of enteric viruses on environmental fomites. Appl. Environ. Microbiol. 60;3704-3710.
- Abad, F.X., Pintó, R.M., Gajardo, R., and Bosch, A. 1997. Viruses in mussels: public health implications and depuration. J. Food Protection 60;677-681.
- Bosch, A., Pintó, R.M., Villena, C. and Abad, F.X. 1997. Persistence of human astrovirus in fresh and marine water. Wat. Sci. Technol. 39;243-247.
- Villena, C., Morsy, W., Abad, F.X., Pintó, R.M., and Bosch, A. 2003. Group A rotavirus in sewage samples from Barcelona and Cairo: emergence of unusual genotypes. Appl. Environ. Microbiol. 69;3919-3923.
- Caballero, S., Abad, F.X., Loisy, F., Le Guyader, F.S., Cohen, J., Pintó, R.M., and Bosch, A. 2004.Rotavirus virus-like particles as tracers in environmental studies. Appl. Environ. Microbiol. 70;3904-3909.

Main fields of interest

- Viral inactivation procedures.
  - On solution, desiccated on fomites (carrier), on foods…
- Assay of viral inactivation procedures on demand (or due to biosafety requirements of CReSA) on a broad range of viruses, either RNA or DNA, enveloped or non-enveloped.

Main fields of interest

- Viral inactivation procedures.
  - On solution, desiccated on fomites (carrier), on foods…

- **Abad, F.X.,** Pintó, R.M., Diez, J.M., and Bosch, A. 1994. Disinfection of human enteric viruses in water by copper and silver in combination with low levels of chlorine. Applied and Environmental Microbiology 60;2377-2383.
- **Abad, F.X.,** Pintó, R.M., and Bosch, A. 1997. Disinfection of human enteric viruses on fomites. FEMS Microbiology Letters 156;107-111.
- **Abad, F.X.,** Pintó, R.M., and Bosch, A. 2000. Virus-inactivation processes: The way to ensure virus safe products. Recent Research Developments in Microbiology 4:643-655.
- **Abad, F.X.** y Fraile, L. 2009. Teoría y práctica de la limpieza y desinfección en granjas porcinas. Suis 58; 14-22 (in Spanish)
- **Abad, X.,** Majó, N., Rosell, R., and Busquets, N. 2012. Assay of several inactivation steps on West Nile Virus and H7N1 highly pathogenic avian influenza virus suspensions. Biosafety (http://dx.doi.org/10.4172/2167-0331.1000103)

Main fields of interest

- Viral inactivation procedures. Validation and standardization.

Table 2		Viruses				
Agent	**Contact time**	**SVDV**	**H7N1 HPAIV**	**H7N7 HPAIV**	**WNV**	**CHIKV**
AL buffer	10 min	≤2 $\log_{10}$	≥3 $\log_{10}$	≥3.5 $\log_{10}$	ND	ND
B3 buffer	25 min	NR	ND	≥3.5 $\log_{10}$	≥4 $\log_{10}$	≥3 $\log_{10}$
PBI buffer	10 min	≥5 $\log_{10}$	≥3 $\log_{10}$	ND	ND	ND
RAV1 buffer	10 min	≥4 $\log_{10}$	≥3.5 $\log_{10}$	≥3.5 $\log_{10}$	≥1.5 $\log_{10}$	ND
Trizol	10 min	4 $\log_{10}$	≥1.5 $\log_{10}$	≥2.5 $\log_{10}$	≥2 $\log_{10}$ (T)	≥2 $\log_{10}$ (T)
UV	30 min	≥6 $\log_{10}$	≥ 6 $\log_{10}$	ND	≥4 $\log_{10}$	≥4 $\log_{10}$
	30 min		4.5 $\log_{10}$	ND		
	30 min		3.5 $\log_{10}$	ND		
70°C	10 min	≥5 $\log_{10}$	≥4 $\log_{10}$	ND	4.5 $\log_{10}$	5 $\log_{10}$
70°C	15 min	6 $\log_{10}$	≥4 $\log_{10}$	≥4 $\log_{10}$	4.5 $\log_{10}$	5 $\log_{10}$
FTA cards	10 min	4 $\log_{10}$	≥3 $\log_{10}$	ND	≥4 $\log_{10}$	≥4 $\log_{10}$

Data expressed, in all cases, as log10 reduction form initial viral titer. **NR:** No reduction after treatment; **ND:** Not done yet; **(T):** Toxicity at high dilutions, the effectiveness of the treatment could be higher that reported; **(*):** Carrier test performed with viral inocula desiccated on inert surfaces and submitted to H2O2 cycle strictly following manufacturer's instructions.

Main fields of interest

- Viral inactivation procedures. Application to disinfection biosafety standard protocols

Table 1		Viruses				
Disinfectant	**Contact time**	**SVDV**	**H7N1 HPAIV**	**H7N7 HPAIV**	**WNV**	**CHIKV**
4% Acetic acid	10 min	NR	≥4 $\log_{10}$	≥4 $\log_{10}$	≥2 $\log_{10}$ (T)	≥3 $\log_{10}$
Cloramine T	25 min	≥4 $\log_{10}$	≥4 $\log_{10}$	ND	≥2 $\log_{10}$ (T)	≥4 $\log_{10}$
70% Etanol	10 min	4 $\log_{10}$	≥4 $\log_{10}$	≥4 $\log_{10}$	≥4 $\log_{10}$	≥4 $\log_{10}$
H_2O_2 (vapour)(*)	5 hours	NR	≥2 $\log_{10}$	≥4 $\log_{10}$	----	----
1% Bleach	10 min	≥6 $\log_{10}$	≥4 $\log_{10}$	≥4 $\log_{10}$	≥3 $\log_{10}$	≥3 $\log_{10}$
0.1% Bleach	10 min	1 $\log_{10}$	1 $\log_{10}$	1 $\log_{10}$	≥3 $\log_{10}$	1-2 $\log_{10}$
1% Limoseptic	30 min	4 $\log_{10}$	≥3 $\log_{10}$	ND	≥3 $\log_{10}$	≥3 $\log_{10}$
PERAsafe	10 min	≥5 $\log_{10}$	≥3 $\log_{10}$	ND	ND	≥4 $\log_{10}$
1% Virkon	10 min	≥5 $\log_{10}$	≥4 $\log_{10}$	≥5 $\log_{10}$	≥3 $\log_{10}$	≥3 $\log_{10}$ (T)
pH=12.0	12 hours	4-5 $\log_{10}$	3-4 $\log_{10}$	ND	ND	≥3 $\log_{10}$
pH=12.9	12 hours	6 $\log_{10}$	≥4 $\log_{10}$	ND	ND	ND

Data expressed, in all cases, as log10 reduction form initial viral titer. **NR:** No reduction after treatment; **ND:** Not done yet; **(T):** Toxicity at high dilutions, the effectiveness of the treatment could be higher that reported; **(*):** Carrier test performed with viral inocula desiccated on inert surfaces and submitted to H2O2 cycle strictly following manufacturer's instructions.

Main fields of interest

- Application of quality tools in the management of a biosafety facility.
  - GLP application on research groups
  - ISO 17025 application in a research facility. How, on what and why?
  - ISO 15793 Biological risk management on biocontainment facilities.
  - Lifelong training of staff in biosafety issues

Main fields of interest

- Application of quality tools in the management of a biosafety facility.

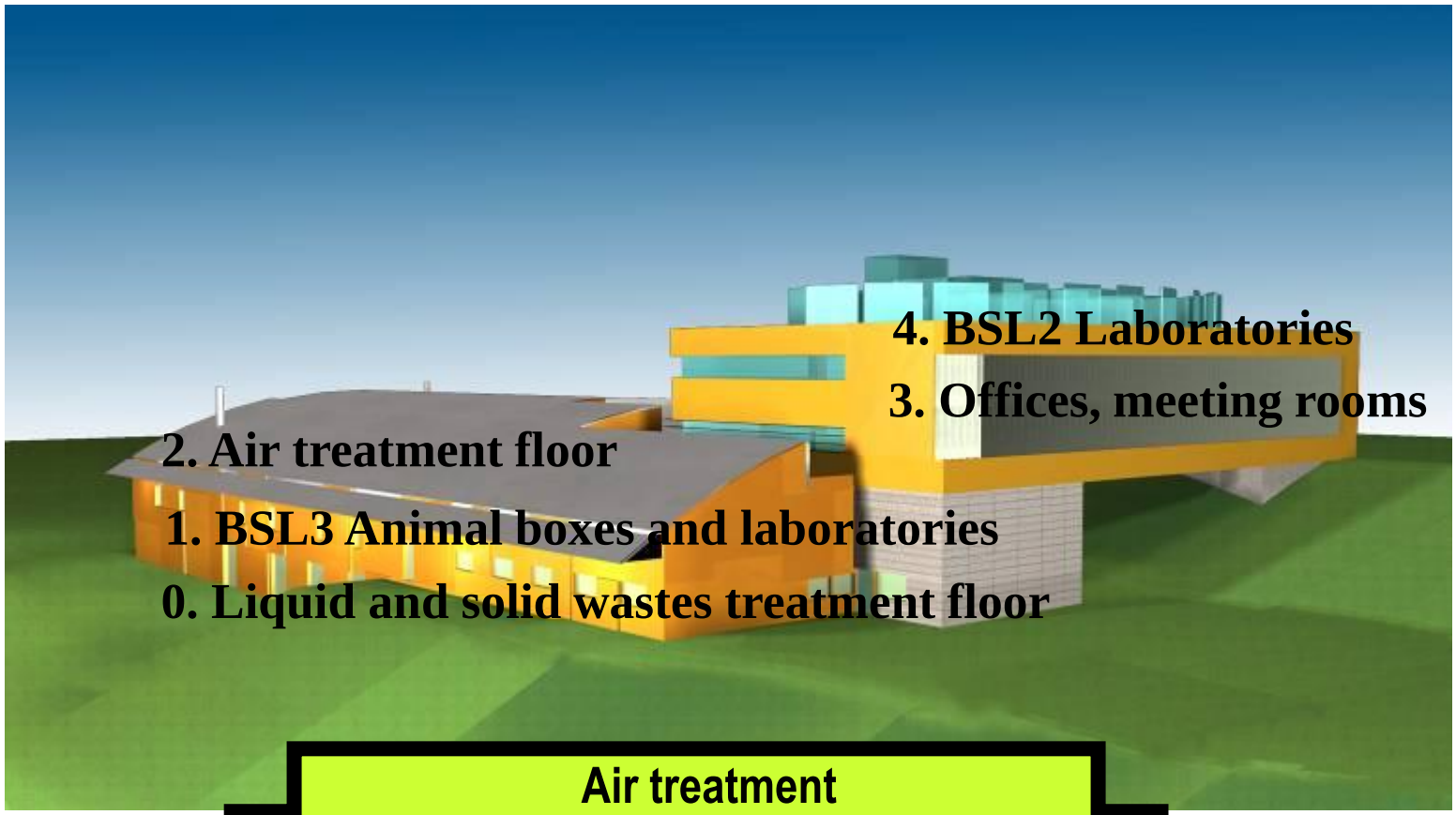
- Abad, F.X. 2005. Principis de Bones Pràctiques de Laboratori (BPLs). Implantació en un Laboratori de Recerca. Omnis cellula 8;22-27. (in catalan).
- Abad, F.X., Bosch, A., y Navarro, C. 2005. Implementation of Good Laboratory Practice in a University Research Unit. Quality Assurance Journal**.** 9; 304-311.
- Weidmann, M., Hufert, F., Elschner, M., Silman, N., Mirazimi, A., Morejón de Girón, F., Butaye, P. 2009. Networking for BSL-3/4 laboratory scientist training. Nature Reviews Microbiology 7;756.
- Abad, FX. 2013. Biosafety and Quality issues must go hand in hand. Biosafety (doi: 10.4172/2167-0331.1000e142).
- Abad, X. 2014. CWA 15793: When the Biorisk Management is the Core of a Facility. Biosafety 3: 119. (doi:10.4172/2167-0331.1000119)

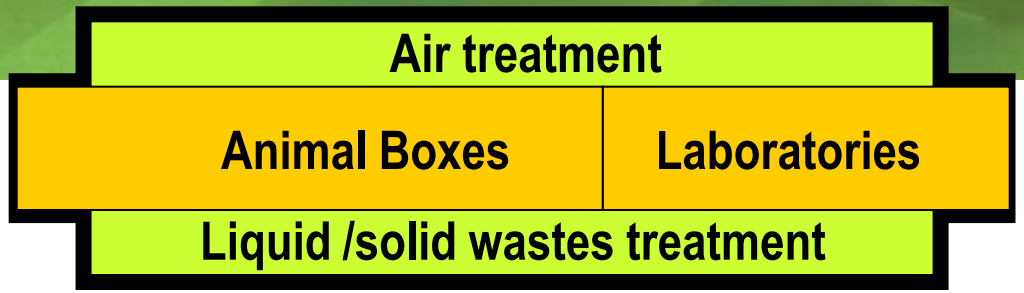
- Where I work?

CReSA, research facility devoted to Animal Health. Our state-of-the-art building started in operation at 2006. More than 100 people (among technicians, researchers and platform staff).

Funding from governmental departments and agencies, from national and European competitive projects and from contracts with private companies.

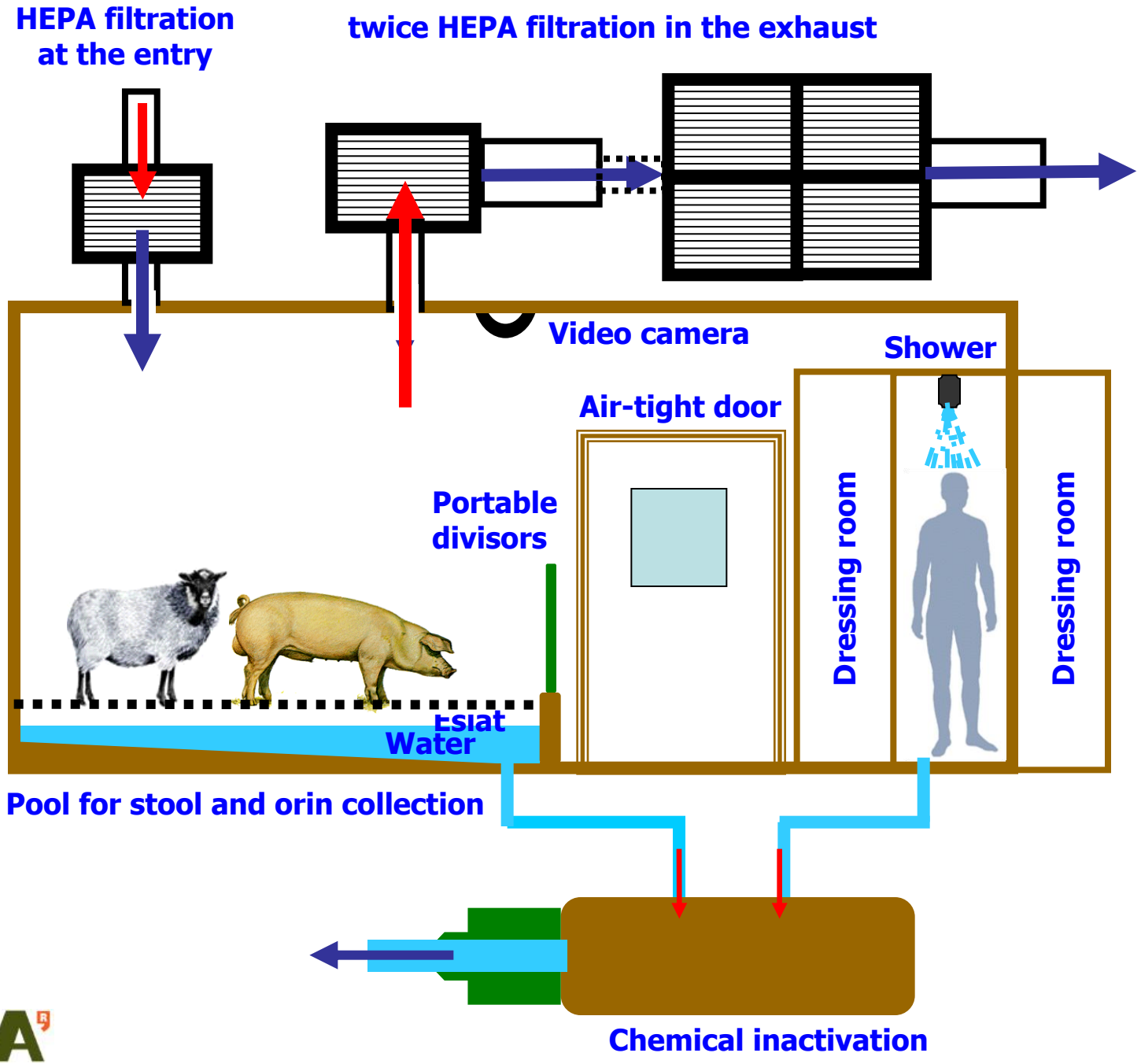
The whole building





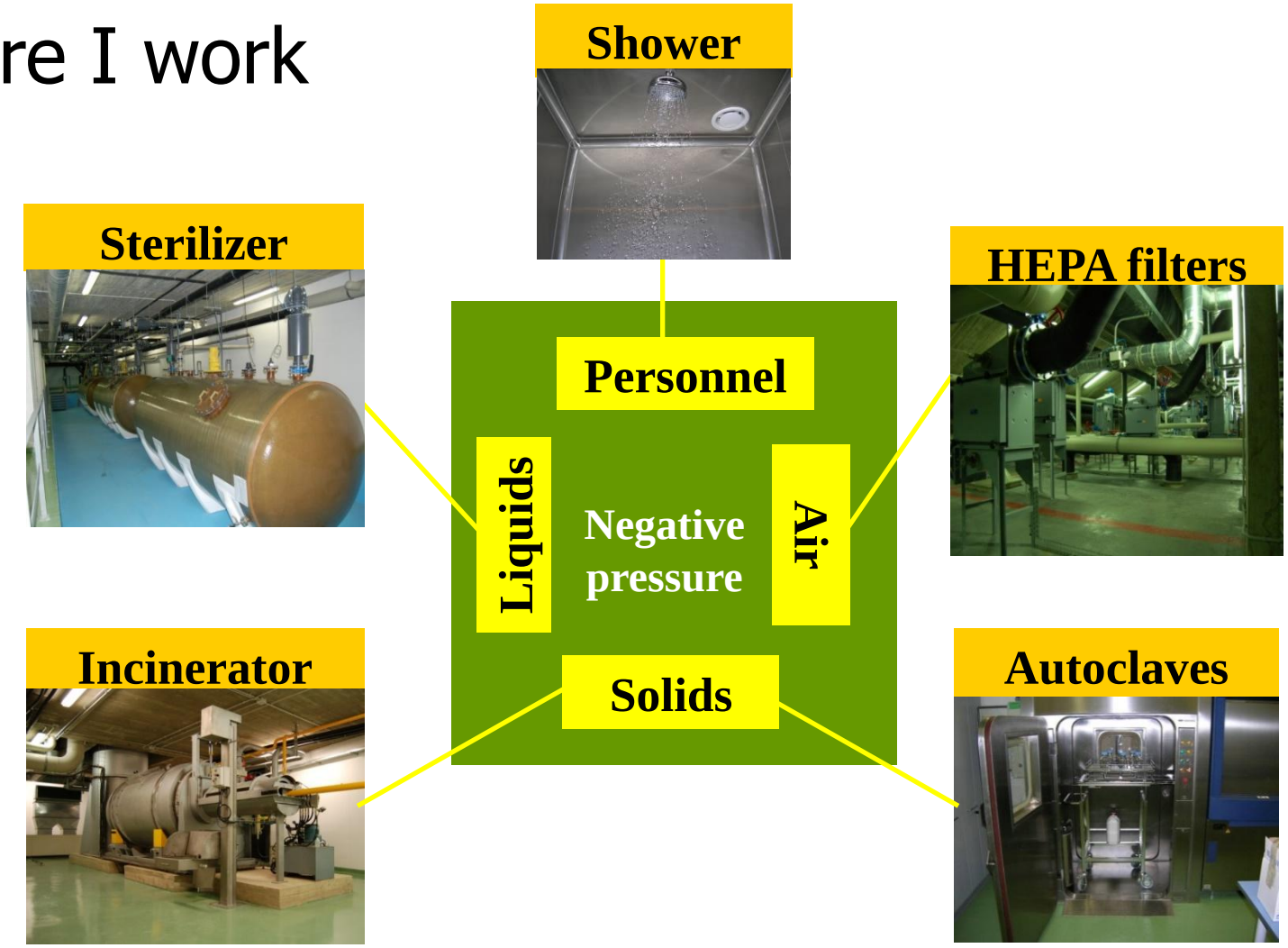
"Sandwich"
"Box in a Box"

CReSA
Centre de Recerca en Sanitat Animal



CReSA
Centre de Recerca en Sanitat Animal

- Where I work


Shower
Sterilizer
HEPA filters
Personnel
Liquids
Negative pressure
Air
Incinerator
Solids
Autoclaves

Biosafety, quality and viral inactivation

- More than 40 international SCI papers.
- Several chapters in virology books.
- Contracts with private companies.
- External expert for private companies in assessment of viral inactivation steps.
- Expert in GLP and ISO implementation in research environments.

- CReSA

  CReSA Building

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