

Working for Cephs' Facilities

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In Directive 63/2010, Annex III, section B, species-specific housing information are reported, but there are no indications about Cephalopods housing; nevertheless, cephalopods are included in the Directive 63/2010.

According to the literature, any lab or any Institute has its own cephalopods housing procedures and systems, and most of the time housing parameters are never controlled or considered; this could affect animal welfare.

In designing and setting up one facility for Cephalopods, key aspects to consider are:

- Animal welfare needs: the facility should assure that the equipments allow to control water parameters and light cycle and that there's enough space for breeding and feeding activities.
- Research needs: some procedures could require particular rooms (darkness, surgical areas, biosafety containment).
- Environment: ooms should be designed to allow the proper ventilation, heating and air conditioning and should be safe to work with water.

Hence, a successfull facility design should consider all these issues and, moreover, communication between researchers and engineers in charge of the building is an important is important in achieving this goal.



COST Action FA1301 – CephsInAction

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Directive 63/2010 Article 22

Requirements for installations and equipment

1. Member States shall ensure that **all establishments of a breeder, supplier or user have installations and equipment suited to the species of animals housed** and, where procedures are carried out, **to the performance of the procedures.**
2. The design, construction and method of functioning of the installations and equipment referred to in paragraph 1 shall **ensure that the procedures are carried out as effectively as possible**, and aim at obtaining **reliable results** using the minimum number of animals and causing the minimum degree of pain, suffering, distress or lasting harm.
3. For the purposes of implementation of paragraphs 1 and 2, Member States shall ensure that the relevant requirements as set out in **Annex III** are complied with.

ANNEX III

REQUIREMENTS FOR ESTABLISHMENTS AND FOR THE CARE AND ACCOMMODATION OF ANIMALS

SECTION A

The physical facilities

- consideration on design
- holding & procedures rooms
- Service rooms

The environment and control thereof

- Ventilation and temperature
- Lighting and noise
- Alarm systems

Care of animals

- health
- Animals taken from the wild
- Housing and enrichment
- Feeding and watering
- Resting and sleeping area
- Handling

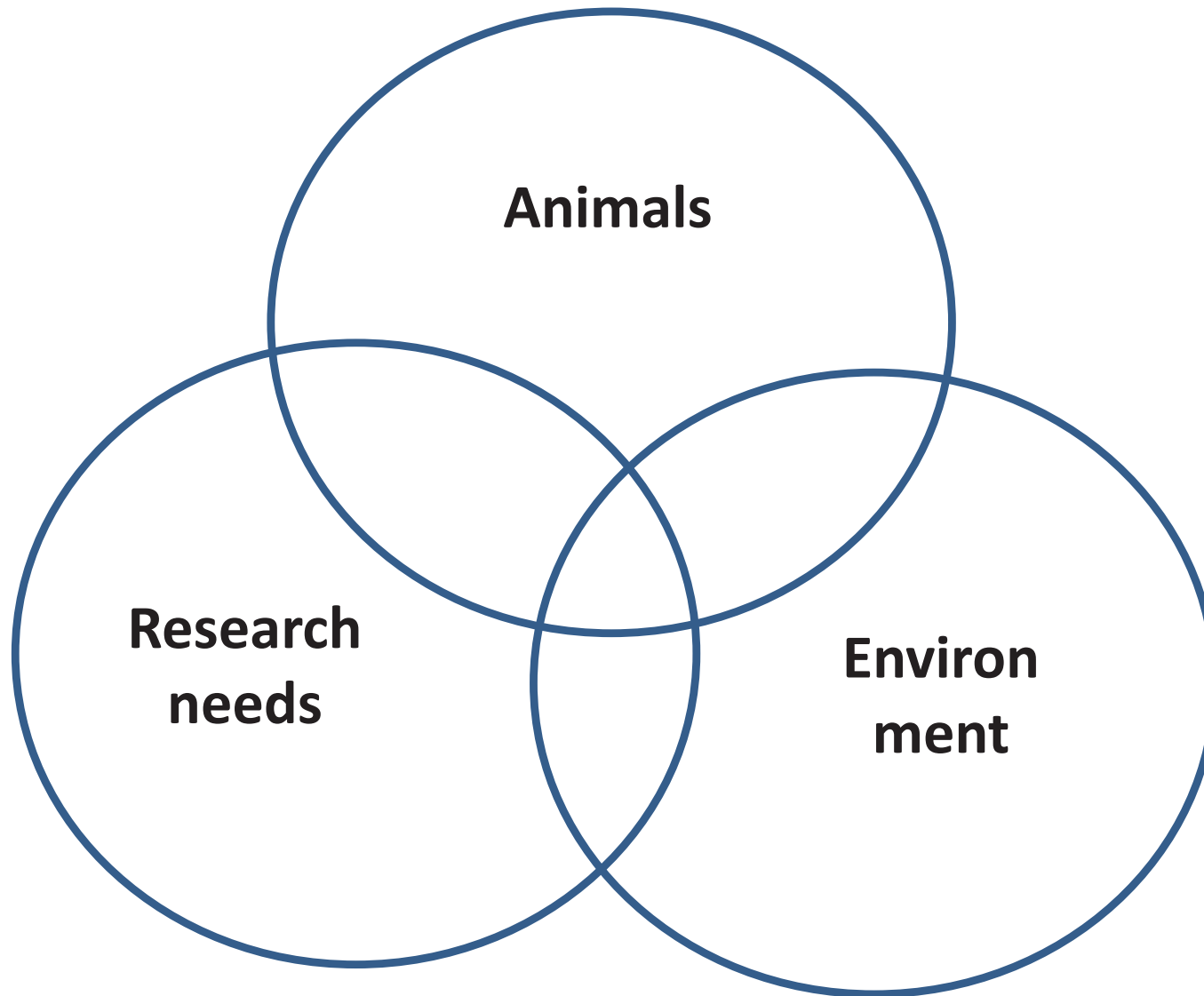
SECTION B: Species-specific section

CEPHS ??

**Excellence in Research
is based on
excellence in Animal Welfare**



CEPHS' FACILITIES



DESIGNING THE CEPHS' FACILITY

ANIMAL NEEDS

Welfare

- Water parameters (pH, salinity, T°, O₂)
- Light
- Enrichment
- Feeding
- Breeding
- Species-specific animal density in tanks
- Transport issue

Biosafety – Health monitoring

- Water microbiological status;
- Live food microbiological status
- Quarantine

DESIGNING THE CEPHS' FACILITY

ANIMAL NEEDS

Welfare

Water parameters (pH, salinity, T°, O₂)

place of capture vs holding rooms



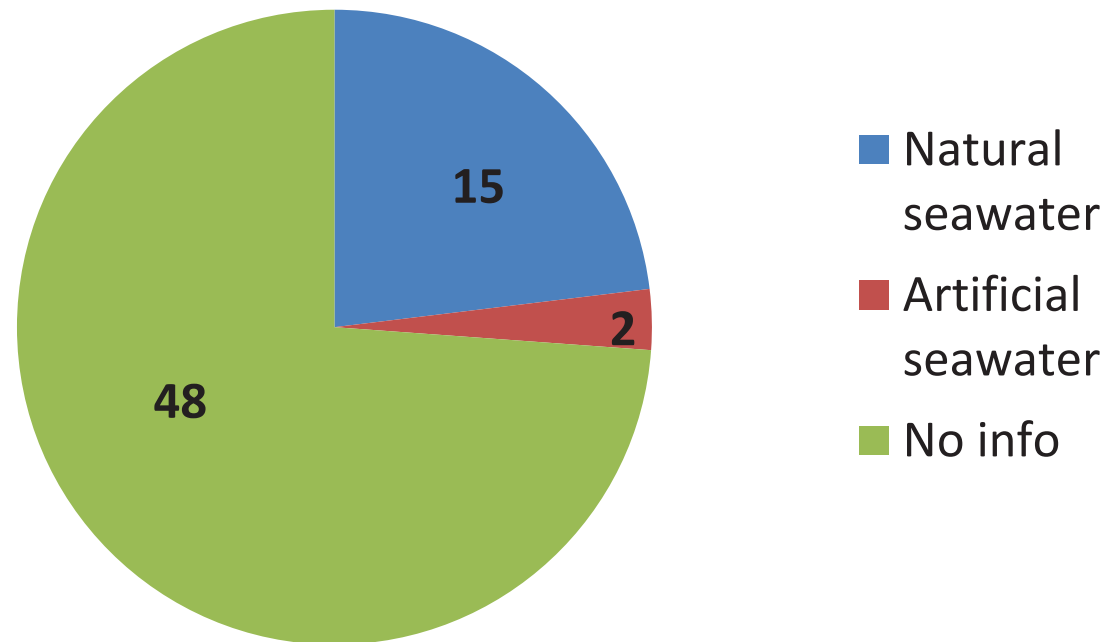
RAS vs natural seawater flowthrough

DESIGNING THE CEPHS' FACILITY

ANIMAL NEEDS

65 papers from 2010

Water used

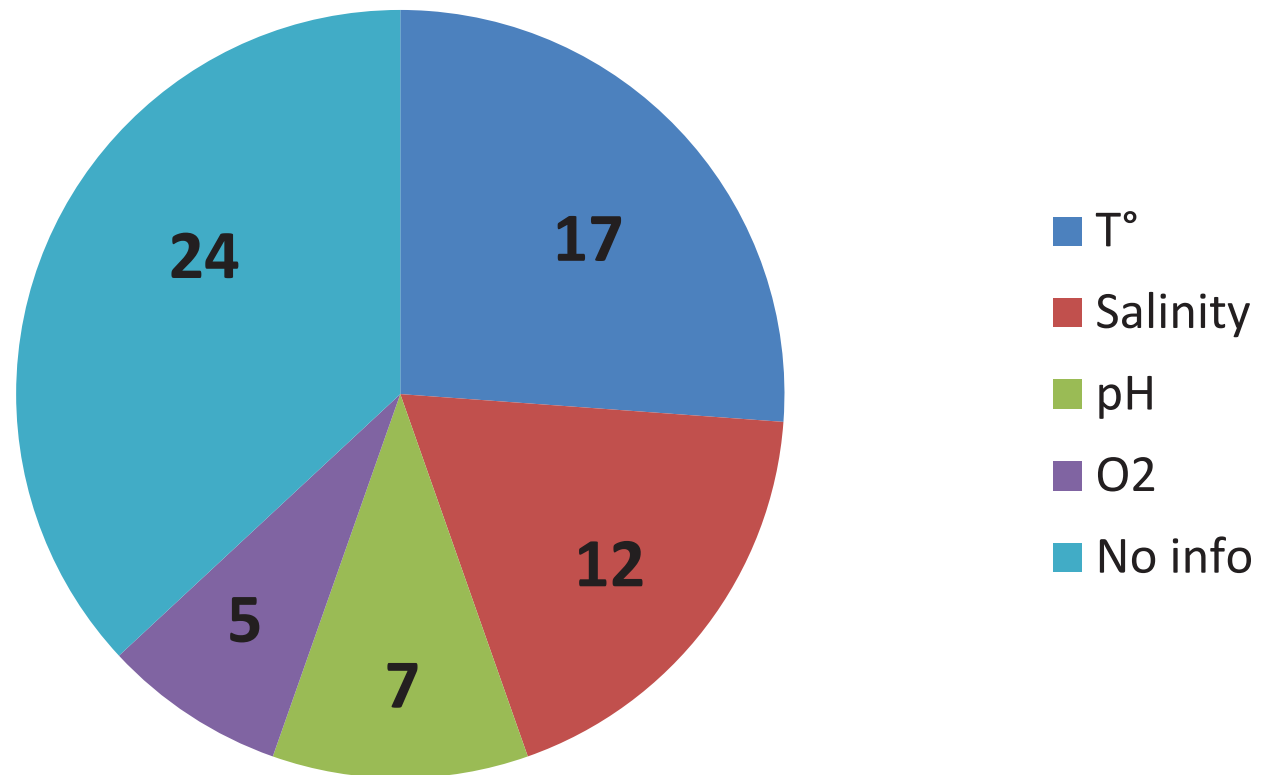


DESIGNING THE CEPHS' FACILITY

ANIMAL NEEDS

65 papers from 2010

Water parameters



DESIGNING THE CEPHS' FACILITY

ANIMAL NEEDS

Welfare

Where do we take water from?

Pollutants?

Infective agents?

... Filtrations systems

DESIGNING THE CEPHS' FACILITY

RESEARCH NEEDS

Procedures

- Holding rooms vs experimental rooms
- Equipment needed
- Safety of procedures
- Specific experimental needs: light, noise, diet, surgery, imaging, irradiation

Biosafety

- Infections vs clean rooms
- M.O. transmission and treatments

HEALTH MONITORING

Humans

Wrong handling

- stressful
- injuries
- No soap/cream/detergent on hands

Human microbiota

1×10^6 bacteria / cm^2 skin → not only opportunistic pathogens

Grice EA et al. (2008) Genome Research, 18(7):1043-50

→ *PPE > gloves: protect your cephs by yourself?*

Working for Ceph's Facilities

HEALTH MONITORING

Ceph's

Genetic

Control

Infection

A small, raised, erythematous lesion developed on the dorsum of the hand of a 35-year-old man who worked in a pet shop



Nguyen, C. N Engl J Med 2004;350:8e



THE NEW ENGLAND
JOURNAL of MEDICINE

→ PPE > gloves: protect yourself !!!

DESIGNING THE CEPHS' FACILITY

ENVIRONMENTAL NEEDS

Environment > AALAC

- HVAC
- Filtration systems (in case of treatments...)
- Ceilings, walls, floors
- Power and lighting
- Noise
- Sanitation areas
- Transport/Flow patterns

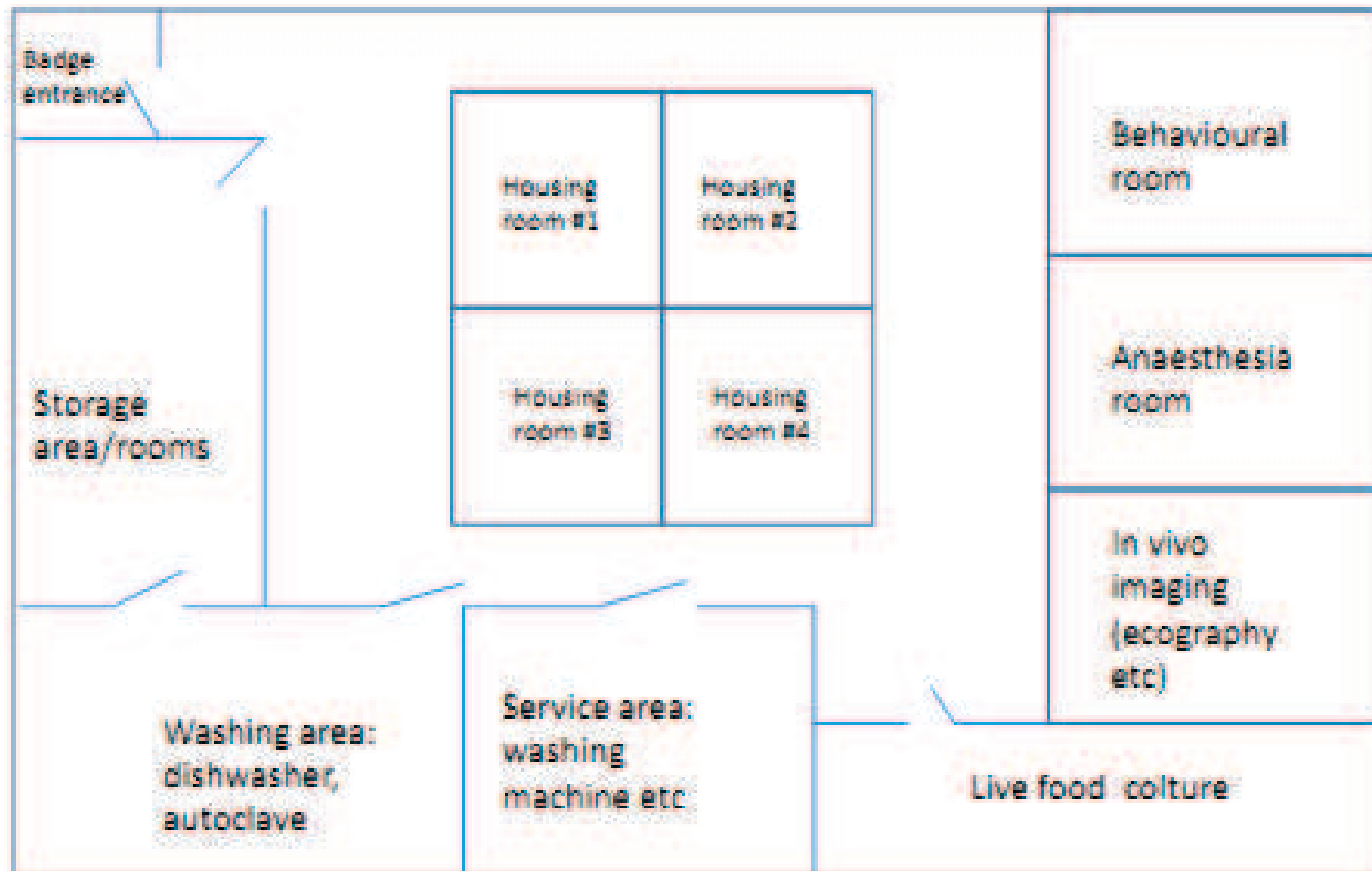
Physical plant security

- Drainage system
- Emergencies set-up
- Security
- Waste management (H2O !!)

DESIGNING THE CEPHS' FACILITY

General organization of the rooms of the facility

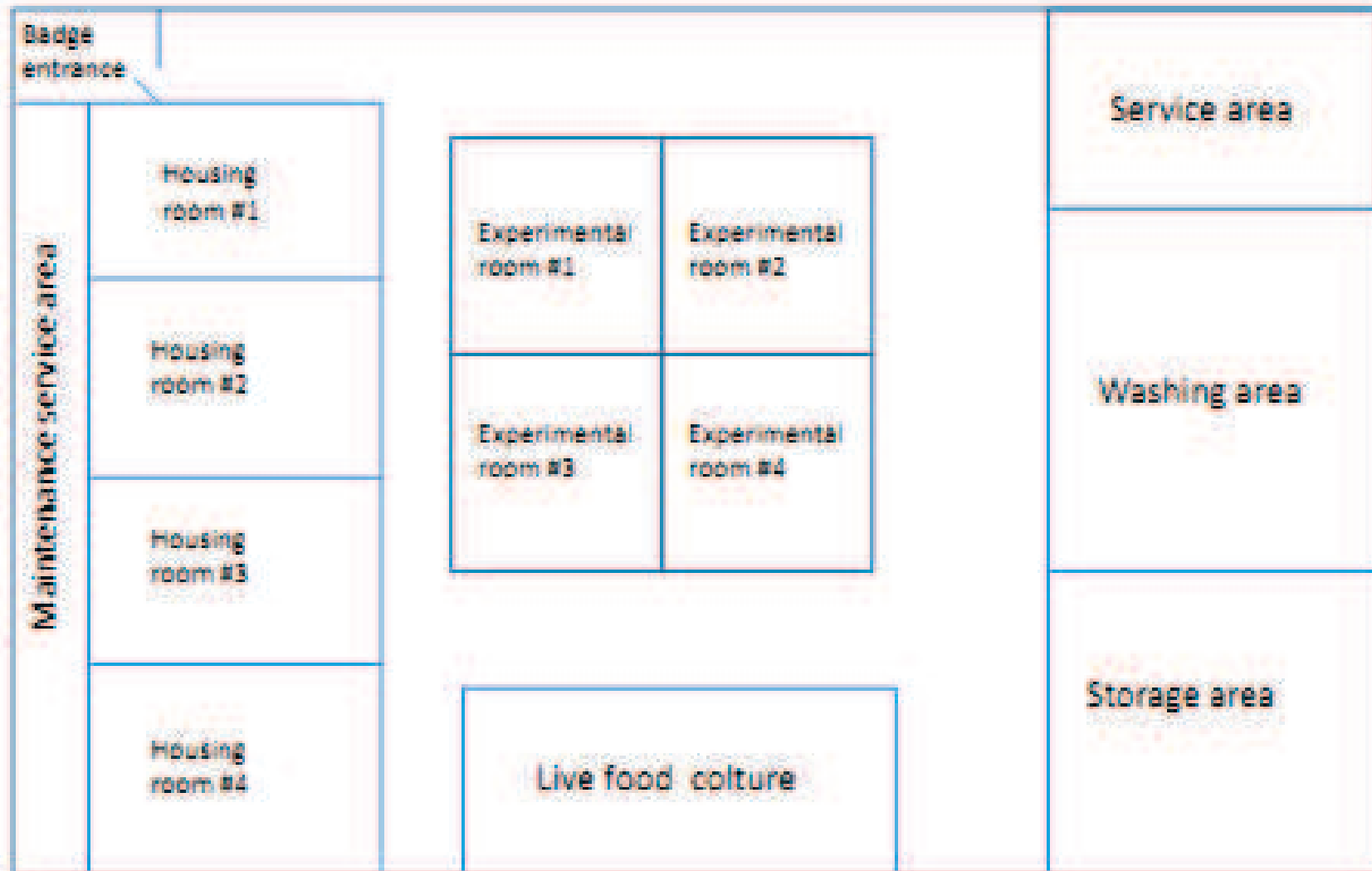
If maintenance possible from the floor below



DESIGNING THE CEPHS' FACILITY

General organization of the rooms of the facility

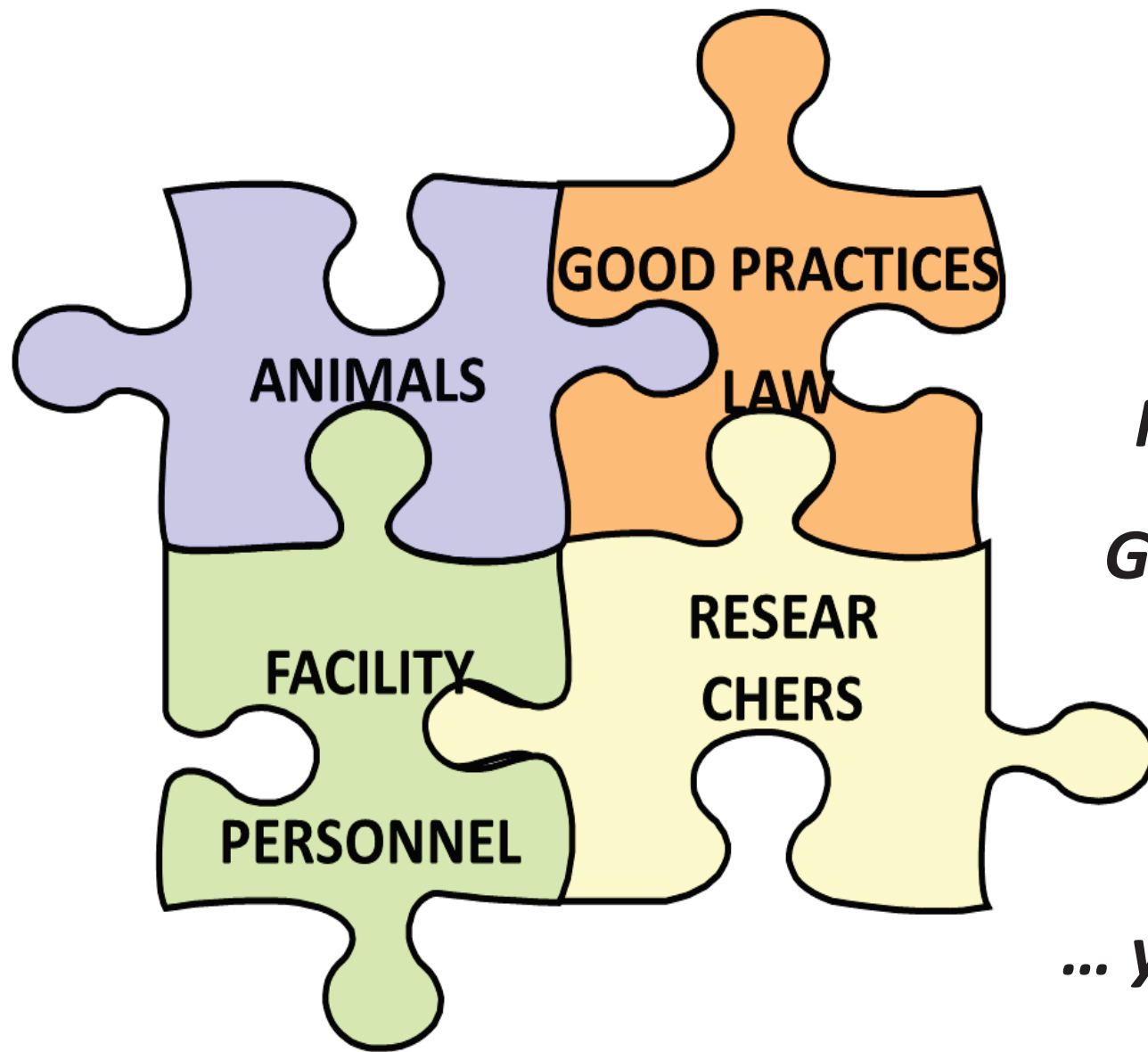
If maintenance not possible from the floor below



Ipothetical plants

Space vs functionality





Thank

Marinella Salemmme

Giovanni De Martino

Dr G. Fiorito

... you for your attention