



TRAINING COURSE ON FISH NUTRITION RESEARCH BENICÀSSIM 2017



	13th June	14th June	15th June	16th June
09:00				
09:30	Registration	Prof Marisol Izquierdo (ULPGC) Larval nutrition programming in marine fish	Dr Jaume Pérez Sánchez (CSIC) Biomarkers for fish nutrition related issues	
09:45				
10:00	Mr Sirri Kayhan (USSEC) Presentation of USSEC, Profile of participants		Dr Josep Caldúch Giner (CSIC) Predicting fatty acid profiles of fish fed different fat sources	
10:10	Dr Jaume Pérez-Sánchez (CSIC) Presentation of CSIC activities			
10:30	Coffee Break			Visit to IATS-CSIC facilities
11:00	Dr Sadasivam Kaushik (INRA) Developing feeds with very low levels of FM and FO: Issues and efforts made as part of ARRAINA	Dr Ariadna Sitjà Bobadilla (CSIC) Impact of parasite infections in sea bream and sea bass farms (PARAFISHCONTROL approach)	Dr. Jaime Nácher Mestre (CSIC) Impact of new diet formulations on food safety	
12:00	Dr Genevieve Corraze (INRA) Rainbow trout: long term feeding with low FM and FO feeds including broodstock	Dr Carla Piazzon & Dr. Itziar Estensoro (CSIC) Nutritionally-mediated effects on bacteria and parasite infections	Dr Ariadna Sitjà Bobadilla & Dr Josep Caldúch Giner (CSIC) Sharing EU aquaculture research facilities (AQUAEXCEL & AQUAEXCEL 2020)	
12:30				
13:00				
13:30	Lunch Break			
15:00	Prof. Marisol Izquierdo (ULPGC) Sea bass: Impacts of low FM and FO feeds on health and growth performance	Dr. Luis Conceição (SPAROS) Models and tools for measuring environmental impacts	Prof. Juan Manuel Afonso (ULPGC) Sea bream genetic improvement. Nutrient x Genotype interactions	
16:00	Dr Jaume Pérez Sánchez (CSIC) Sea bream: Impacts of low FM and FO feeds on health, growth performance, and sex population ratio			
16:30				
17:00				
19:00		Cocktail		



Plant proteins for the future



Abstracts book



ARRAINA Technical Booklets



Feed ingredients



Nutrient requirements



Biomarkers in fish nutrition

ARRAINA Key Achievements



Projects Factsheets



Program

Project links

Web tools

Welcome to the Training Course on Fish Nutrition Research: Recent Advances and Perspectives, organized by the Nutrigenomics and Fish Growth Endocrinology Group of Institute of Aquaculture Torre de la Sal (IATS-CSIC). The Course is sponsored by USSEC and is directed to R+D personnel of the aquaculture sector working in fish nutrition and health. From June 13-15 2017, conferences will be held at Hotel Voramar in Benicàssim by researchers of IATS-CSIC (Nutrigenomics and Fish Pathology Groups), INRA (Drs. S. Kaushik and G. Corraze), ULPGC (Profs. M. Izquierdo and J. Afonso) and Sparos Lda (Dr. L. Conceição).

Topics will cover a wide range of nutrition-mediated issues: larval nutritional programming, nutrient x genotype interactions, resistance to bacterial and parasite infections, food safety, and long-term consequences of low fish meal/fish oil diets in fish species of interest in aquaculture (rainbow trout, European sea bass, gilthead sea bream).

Main results and conclusions are from the ARRINA EU Project. Current research on ongoing H2020 Projects (ParaFishControl, AQUAEXCEL²⁰²⁰) is also presented.

The Course will be completed with a visit to IATS-CSIC facilities on June 16.

We hope you enjoy your stay and the lectures, in order to have a productive and enjoyable Course.



Hotel Voramar



Course photos



Web page USSEC Course

www.nutrigroup-iats.org/ussec

WIFI: voramar



TRAINING COURSE ON
FISH NUTRITION RESEARCH
BENICÀSSIM 2017

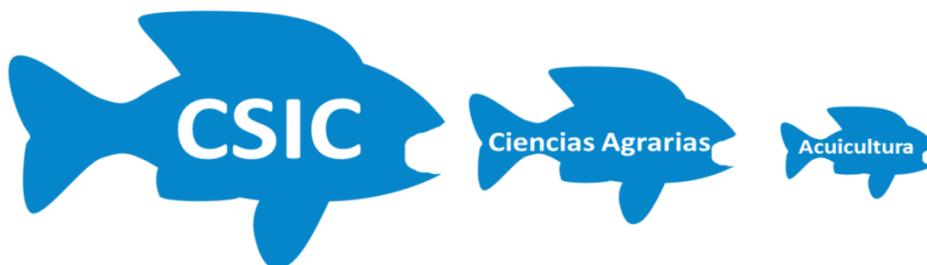
Aquaculture Research at the Spanish National Research Council, CSIC

Who we are and what we do? The numbers of CSIC

Jaume Pérez-Sánchez

Research Professor, Institute of Aquaculture of Torre la Sal (IATS)

Castellón, Spain



- CSIC is the **largest public institution** dedicated to research in Spain and the third largest in Europe (131 Centers & Institutes)
- Has **6% of all the staff** dedicated to Research and Development in Spain (> 3000 staff researches)
- **Generate 20%** of all scientific production in the country
- More than 3000 Research Projects & Actions
- CSIC covers all fields of knowledge



Royal Botanic Garden



Museum Natural Sciences



Scientific & Technical Areas

- 1-Humanities & Social Sciences
- 2-Biology and Biomedicine
- 3- Natural Resources
- **4-Agricultural Sciences**
- 5-Physical Science and Technologies
- 6-Materials Science and Technology
- 7-Food Science and Technology
- 8-Chemical Science and Technology

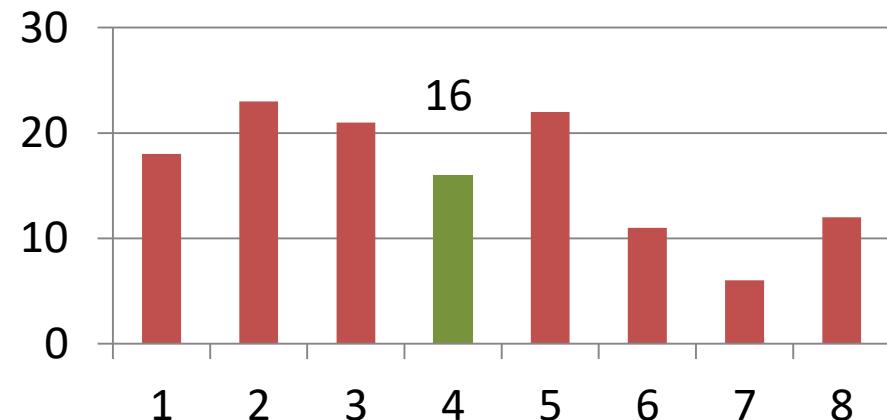
**> 700 M€
Budget**

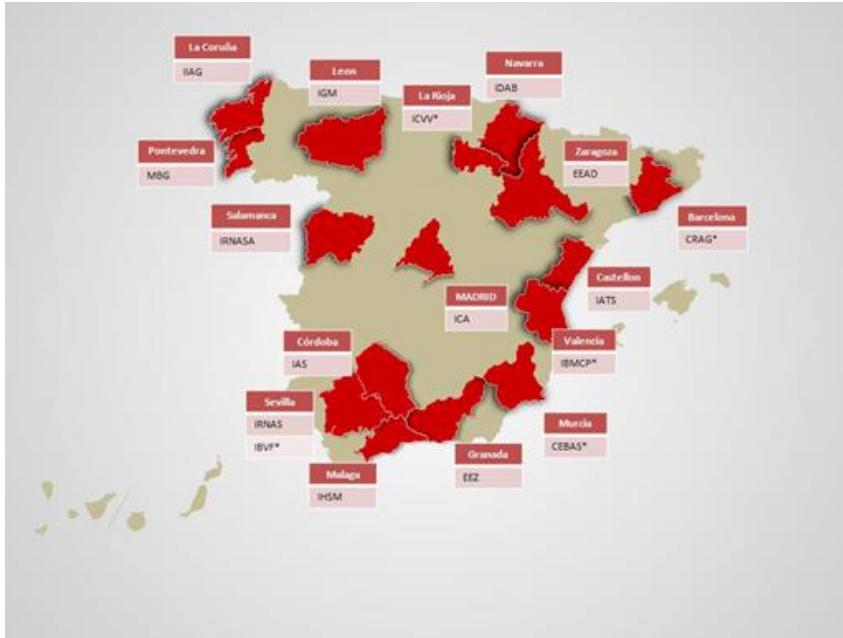
STAFF CSIC > 10,000

STAFF AREA 4 > 1,600

STAFF RESEARCHES_ AREA 4 > 550

131 Centers and Institutes





CSIC Research lines of Agricultural Sciences :

- Soil & Water
- Plant breeding
- Vegetal biology, physiology and biochemistry
- Plants and organism interactions
- **Health & animal production**
(terrestrial + aquatic organisms)

INSTITUTIONS RANKING IN “Agriculture Sciencies”

- 1- USDA (United States Department of Agriculture), USA
- 2- **CSIC (Consejo Superior de Investigaciones Científicas), Spain**
- 3- INRA (Institut National de la Recherche Agronomique), France



slide

Area 4: Agricultural Sciences

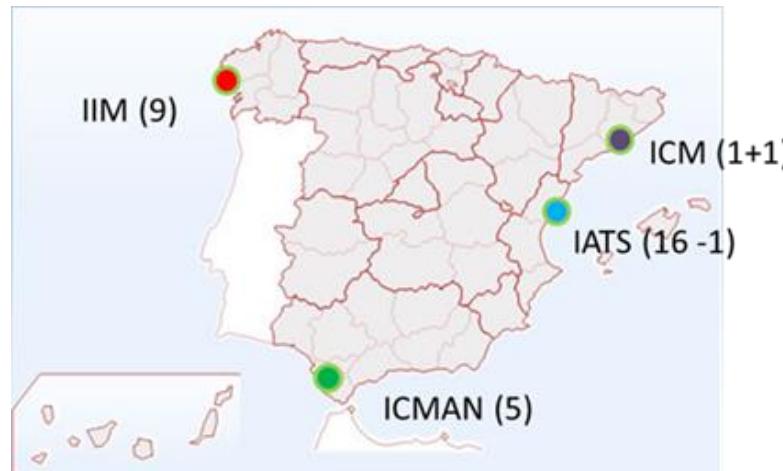
- *Projects & Contracts > 25M€/year*
- *Ph Thesis > 350/year*
- *Scientific articles > 1,000/year*



Health & Animal production
~ 15% CSIC Agricultural Sciences

STAFF AQUACULTURE > 150
> 30 Permanent Senior Researchers

- Inst. Acuicultura Torre la Sal, (IATS, 15)
- Inst. Investigaciones Marinas de Vigo, (IIM, 9)
- Inst. Ciencias marinas de Andalucía, (ICMAN, 5)
- Inst. Ciencias del Mar de Barcelona, (ICM, 2)



IATS, IIM, ICMAN, ICM

- Mollusc biology and eco-physiology
- Early fish development & nutrition
- Fish culture diversification and reproductive performance
- Fish physiology and performance -Alternative raw materials, functional foods, feed additives, prebiotics, and probiotics-
- Fish quality and food safety
- Applied genetics, genomics, proteomics, metabolomics, and bioinformatics for aquatic organisms phenotyping and breeding (nutrition x genome x epigenome)
- Diagnostic tools and therapies for fish and molluscs
- Environment, nutrition and infective agent interactions



Experimental Models

IATS, Inst Acuicultura Torre la Sal

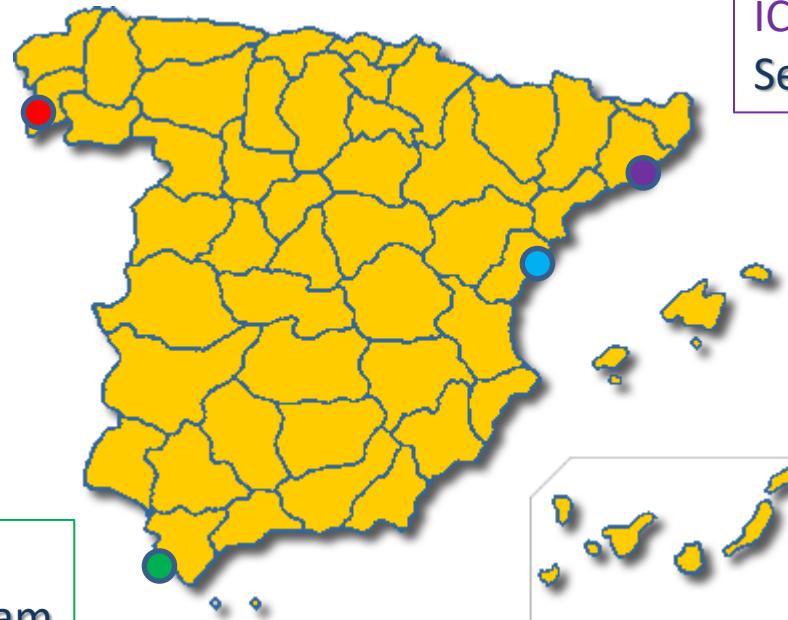
IIM, Inst Investigaciones Marinas Vigo

ICMAN, Inst Ciencias del Mar de Andalucía

ICM, Inst Ciencias del Mar de Barcelona



IIM
Molluscs
Turbot
Sea horse
Zebrafish



ICMAN
Sea bream
Sole



ICM
Sea bass



IATS
Molluscs
Artemia
Sea bass
Sea bream
Sole
Turbot
Zebrafish
Medaka

IATS, Inst Acuicultura Torre la Sal

IIM, Inst Investigaciones Marinas Vigo

ICMAN, Inst Ciencias del Mar de Andalucía

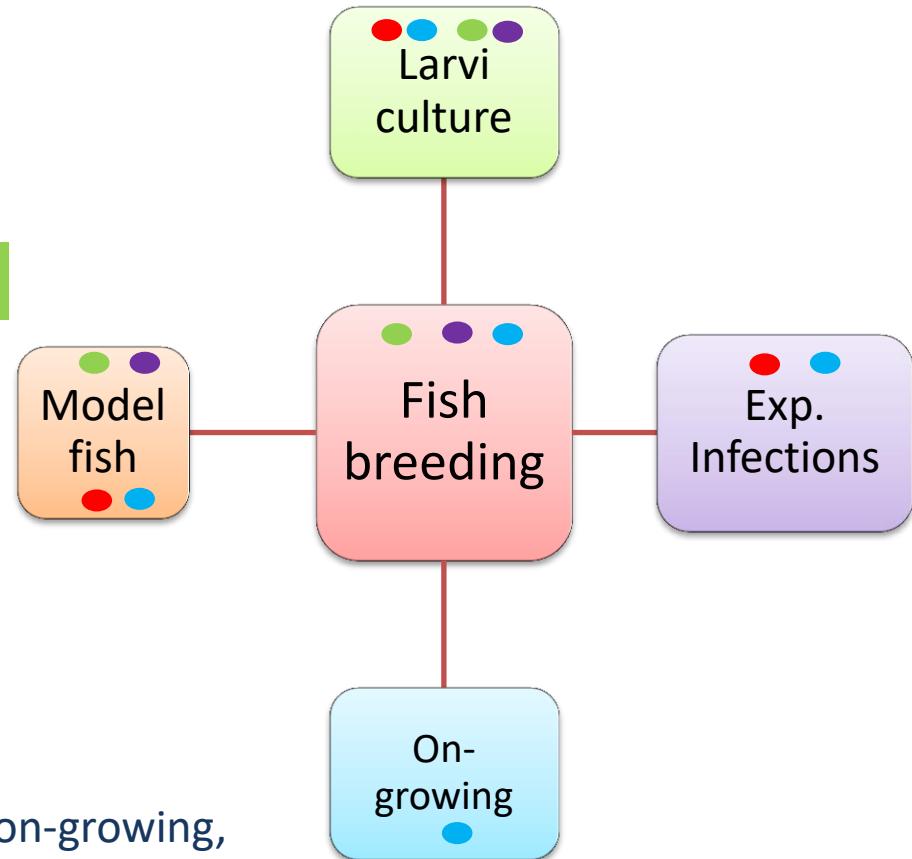
ICM, Inst Ciencias del Mar de Barcelona



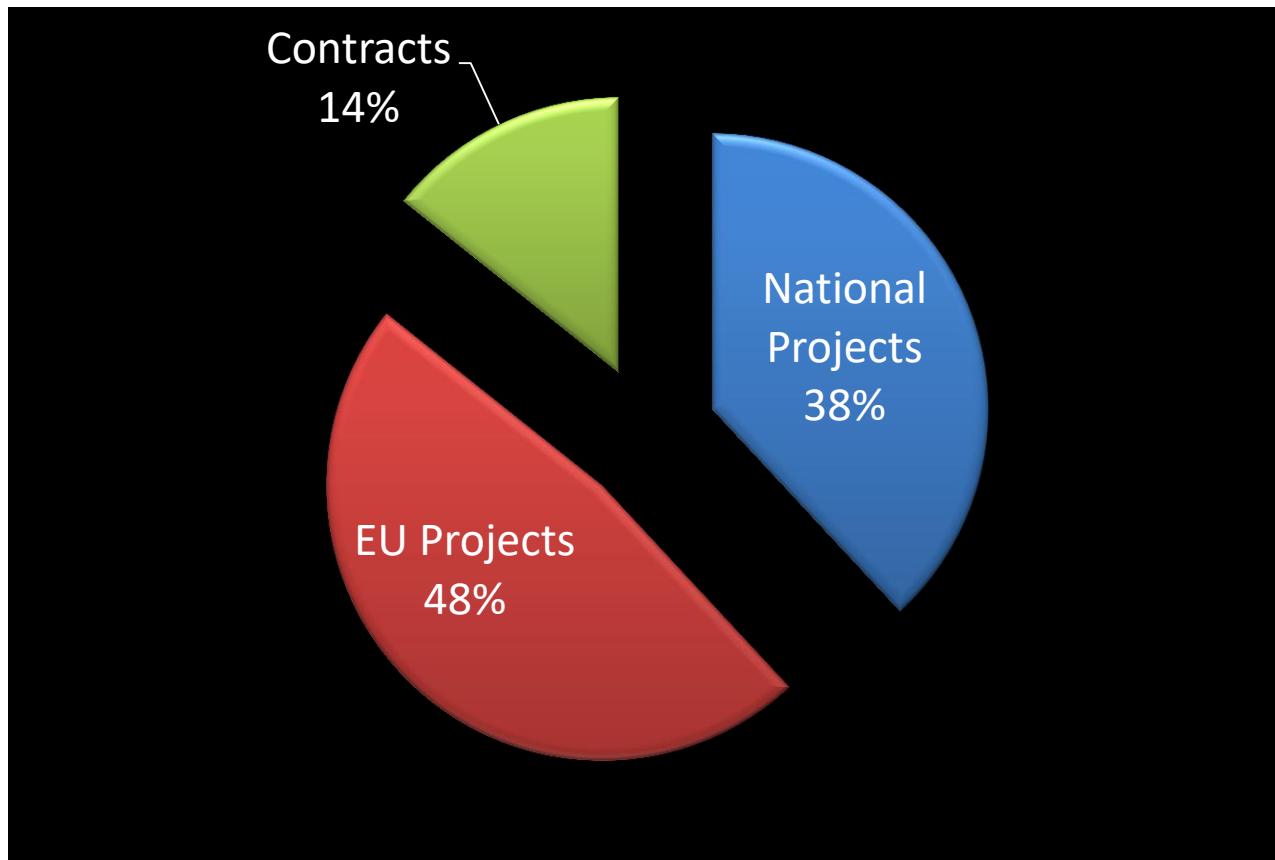
Zebrafish,
IIM



Sea bream on-growing,
IATS



Aquaculture Infrastructures
for Excellence in European Fish
Research



IATS



2009-2013,
FP7-KBBE



IATS



2011-2015, FP7-Capacities,
Research Infrastructures



IATS

ICMAN



2012-2016,
FP7-KBBE



IIM



2010-2014,
FP7-KBBE



IIM

Bivalife

2012-2014,
FP7-KBBE



IIM

FishForPharma

2012-2015, Training network on
Zebrafish, Marie Curie Action



Current EU Projects, H2020

IATS

IIM



2015-2020,
RIA



IATS

IIM



2015-2020
Research
Infrastructures



IATS

IIM

ICM



2017-2022
RIA



ICMAN

IATS



2016-2018
Mairie Curie Action



IIM

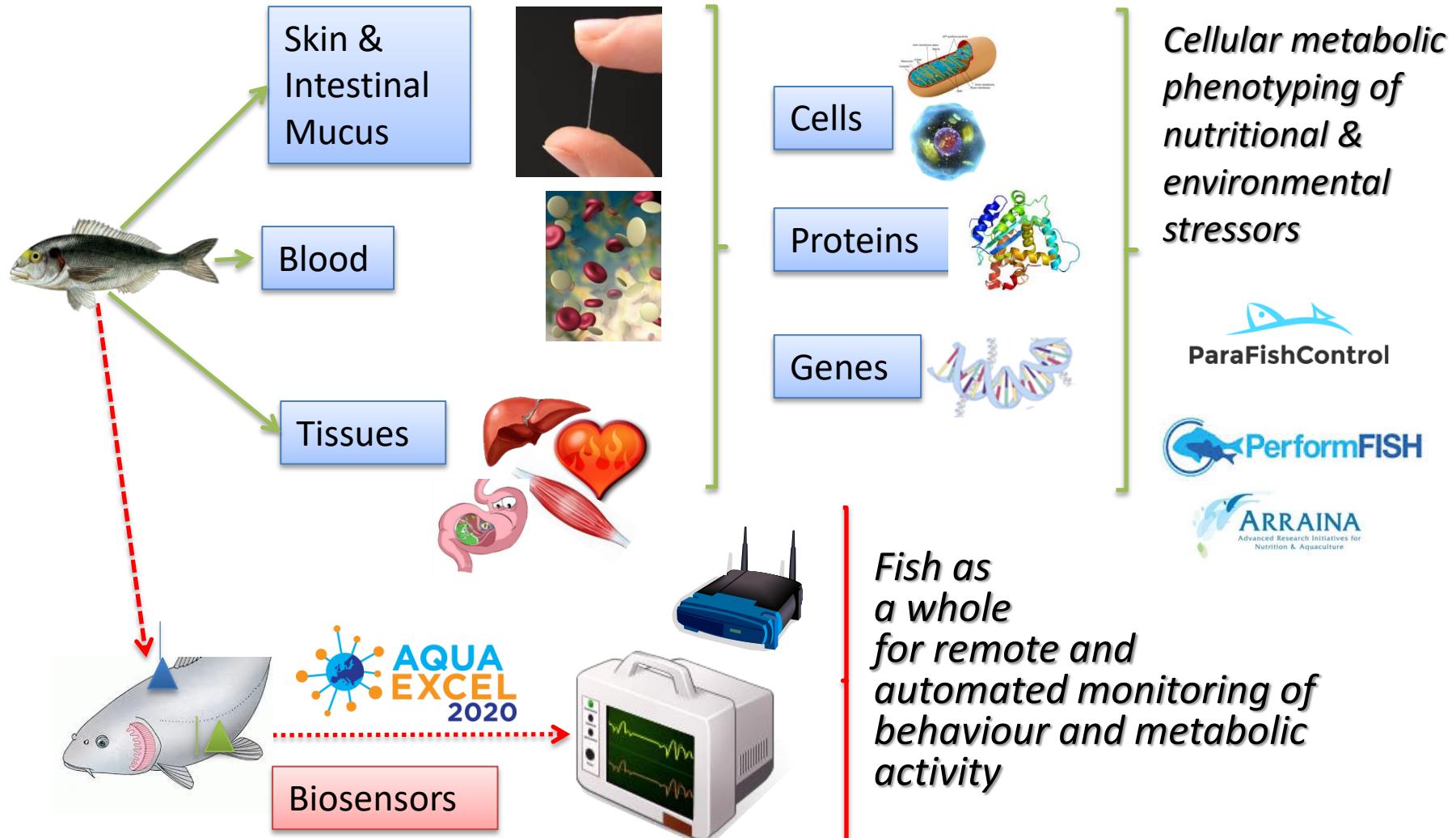


2016-2020
RIA



- **Strength the links with aquaculture technological platforms** to define properly what is known and what is needed by the industry
- **Holistic approaches** integrating nanotechnology, omic technologies and bioinformatics for non-invasive and/or non-disturbing fish phenotyping of productive traits (growth, fat deposition, PUFA quality, stress resistance, diseases susceptibility...)
- **Standardize the use of clinical assays** of diagnostic but also of prognostic value in aquaculture practice, establishing the reference values for a panel of selected biochemical, histological and molecular biomarkers
- **Exploite meta-analysis tools** like FISH&CHIPS with learning capacity or improved predictive value with the update of new data (neuronal systems)
- **Foster research internalization** for a greater visibility in the Mediterranean area, South America and Asia (China)

CLOSING THE CIRCLE





çok teşekkürür ederim

Thanks for your attention!

Muchas gracias!



Moltes gracies!

WELCOME TO BENICÀSSIM

We are here !

