Distinguished Rector of the University of Girona;
Distinguished academic, political and civil authorities;
Colleagues from the university community;
Dear students;
Ladies and gentlemen;

I am honoured to be in the Honoris Causa list of UdG and I am very happy to be present in this solemn academic ceremony.

Let me first give detail about my origin. My father was born in South China in 1916. In 1940, China was in great crisis of insecurity (my grandfather was murdered, his body never found) and lack of food. My father, aged 24, migrated to Cambodia. I was born in 1952 in Cambodia, the 3rd of 9 in the family. In 1974, I left Cambodia to do the PhD in Toulouse for 3 years (I got a scholarship from the French government). When I finished my PhD in 1978, it was the Khmer-rouge and Pol Pot regime in Cambodia, and I did not return and always stayed in Toulouse up to now! With my wife (present here), we had 2 sons (born in France in 1977 and 1980). Both are aeronautical engineers, linked probably to our life in Toulouse. One son decided to leave France to Canada for 3 years in 2011 to have international experiences. But he still stays there and got last year Canadian citizenship. Now, I have 1 grandson and 1 granddaughter born in Canada. So, we are really global citizens!

I had the chance to be integrated at the University Paul Sabatier (Toulouse III) as full Professor. I had the opportunity to set up the aquatic research team namely AQUAECO within the laboratory “Evolution & Biological Diversity”. AQUAECO accounts now for more than 10 permanent staffs including University Professors but also researchers from CNRS and IRD (Institute for Research & Development).

My researches focus on Fish community, especially to the change of Biodiversity in the context of the changing world, including climate change and global environmental changes.
Biodiversity such as species richness, i.e. the number of species living in the specific area, is strongly impacted by the modern life. Understanding the

mechanism of the biodiversity changes in the context of the changing world is very important.

My research focuses especially to the development of the efficiency statistical methods that can predict the biodiversity changes in space and time. For example I have used ANN (artificial neural networks) to predict Fish Species richness worldwide. At the global scale, fish diversity is different from one place to another place. For example, there are thousands species living in Amazon, only 20-30 species in Ebro and most of them are introduced species. ANN models can predict perfectly these changes from only a few parameters, and we found that Primary productivity is the most important parameter explaining the change of fish diversity. So, the high richness of fish in Amazon, Congo, Mekong,... is explained not only by the big area, but also the high productivity. The decrease of productivity due to changes of the environment (e.g. deforestation, climate change) can strongly affect diversity of fish.

At the smaller scale, I contributed to several EU projects on the aquatic biodiversity to predict fish biodiversity in the context of climate change and aquatic contaminants (for example effect of pesticides on fish populations). By using machine learning, especially Ensemble modelling, it is now possible to predict changes in fish diversity in streams in the future (e.g. year 2080, 2100). The results show that the fish species in our rivers will change a lot in the future due to climate change, in term of species richness, turnover and abundances.

Due probably to my origin, during the last recent years, I have also contributed my research in China and South-East Asia as freshwater fishes are very important in food consumption, and the environmental impacts are very important, e.g. damming, overfishing, pollution... In China, Yangtze (3rd world largest river) is strongly impacted by the cascade dams, especially the Three-Gorges dam, one of the largest dams (200 m high, 22 500 MW energy). My works focus mostly to preserve diversity in river dominated by endemic species. The Mekong is an international river crossing several countries (China and several countries in SEA) that has high fish abundance and diversity. But the Mekong is strongly impacted by overfishing and all other

human activities (pollution, dam, climate change...). Recent research results show clearly decreasing fish abundance, diversity as well as fish size! The challenge is to preserve the diversity and abundance of fish in this river for future generations.

Between Girona and Toulouse, we need only 3 hours drive, i.e. more or less the same distance than Toulouse to Bordeaux or Montpellier, but much shorter than Lyon or Paris... Girona is in Catalogna and Toulouse in Occotania, very close culture each-other. So, it can explain that there has always a lot of cooperation between Girona and Toulouse in several fields. My collaboration with UdG is quite ancient. I met Sergi Sabater early 1990 in Toulouse during a PhD defense on periphyton, and he told me about his colleague Emili García-Berthou who is fish ecologist that I immediately made contact!

From this date, we started our collaboration with participation in research projects and the jury of several PhD in both sides. The exchanges quickly expanded to the cooperation between the entire AQUAECO team in Toulouse and entire Institute of Aquatic Ecology team in Girona. Some examples:

- Emili has collaborated with several researchers in AQUAECO as Julien Cucherousset, Sébastien Brosse, Gael Grenouillet, Bernard Hugueny... They contribute currently to Biodiversa project ODYSSEUS that aims to study the effects of the Anthropogenic fragmentation on freshwaters fish;
- Pablo Tedesco has stayed in UdG as post-doc in 2006-2007, and he is now IRD researcher in AQUAECO;
- I have several collaborations with other member of the Institute of Aquatic Ecology in UdG. I contributed with Helena Guasch-Padró to MODELKEY project with EU 6th FP focusing on Aquatic ecotoxicology. Helena has also coordinated KeyBioEffects, a Marie-Curie project that allowed us to have some joint-PhDs between UdG and Toulouse III.
- In 7th FP, we got success with several Erasmus-Mundus projects TECHNO I & II that allowed UdG and UT3 to host several Master and PhD students, and Staff from Asian countries (China, Cambodia, Mongolia, Thailand, Vietnam. The NESSIE project allow us to open our cooperations to South Korea and Oceania (NZ and Australia).

- In Horizon 2020 Helena coordinated a Erasmus+ Capacity Building project UNICAM... With Marta MUÑOZ-FRIGOLA and Anna VILA-GISPERT, we contributed to another Capacity Buiding CONSEA project coordinated by Toulouse.
- ...

These examples show the importance of the cooperation between Aquatic Ecologists in Girona and Toulouse. We succeeded to create a large research network with other European Universities and other countries in the world to improve our research capacity for Aquatic ecology, and train the young researchers worldwide. I hope that our effort will be important for the conservation of the biodiversity especially in the aquatic ecosystems.

The best honour for a university teacher and researcher is that which comes from the appreciation of his colleagues in the world-wide academic republic. By granting me a Doctorate honoris causa at your university you have done me that honour, and my first duty is to thank the University of Girona for allowing me to receive this precious gift. I say 'the University'. But a University itself does not make such decisions. They are proposed by one or more individuals, supported by others, and finally approved and promulgated by those who represent the full authority of the University. They are all real people, not formal institutions and I would like to thank all of them personally as well as collectively for what they have done to give me this honour, as well as to thank them for arranging the journey in this beautiful and historic city.

It is a pleasure and an honour to receive a degree h.c. from the University of Girona.

Thank you very much, University of Girona!
Moltes gràcies a la Universitat de Girona.

Sovan Lek
Girona, May 9, 2019