

# Developmental Biology in Poland

*Guest Editors*

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**Poland (*Polska* in Polish) is the 7th largest country in present day Europe. Some of the principle cities at which Polish Developmental Biology has been carried out over the centuries are illustrated. The city of Lwów, referred to in some articles, is currently known as "Lviv". This is located in Ukraine. Similarly, Wilno is currently known as Vilnius, which is in present day Lithuania. Warszawa (Warsaw); Kraków (Cracow).**

# Preface

For historical reasons, the history of Developmental Biology in Poland is neither long nor rich in great achievements. However, academic life in Poland started many centuries ago: the first University was founded in Krakow (Cracow, the ancient capital of Poland), as early as in 1364 by King Casimirus (later called the Great). After some initial difficult decades, in 1400 it was reorganized with support from Queen Jadwiga and King Wladyslaw Jagiello, the founder of the dynasty of Jagiellons. Since that time the University, now called Jagiellonian, has never ceased its activity. In the XV, XVI and XVII centuries, Poland which was closely connected politically and constitutionally with Lithuania in a Commonwealth, was one of the greatest and most powerful countries in Europe. Unfortunately, in the XVIII century its supremacy dramatically declined and between 1772 and 1795, Poland lost independence after being successively partitioned between three neighbours: Russia, Prussia and Austria. During the next 123 years, i.e. until regaining independence in 1918, after the end of World War I, the cultural, intellectual and scientific life was to a large extent decentralized between the three partitions. In addition, after the fall of the November 1830 Uprising, Polish intellectual might was dissipated by a wave of emigration (the so-called Great Emigration) mainly to France. In the XIX century, when in Western Europe foundations of modern natural sciences were being built, Poland was pre-occupied with unsuccessful attempts to retrieve independence (two lost uprisings in the Russian partition) and to save and maintain Polish culture and traditions against russification in the Russian partition and germanization in the Prussian and the Austrain partitions. The less oppressive, since 1867, when territories annexed by Austria were granted limited autonomy as a region of Galicia, was the rule of Austrian-Hungarian Empire and this was the region where Polish intellectual and scientific life endured and semi flourished. This may be exemplified by the fact that the University in Cracow has never been closed and Polish academics were allowed to become professors and heads of chairs and departments. Many scientists who had started their academic career at the turn of the XIX and XX centuries later played important roles in the development of Science in the independent Poland.

The term *Developmental Biology* was coined around 1960-70, but *Embryology* has remained the main core of this discipline. In partitioned Poland, as in independent, European countries, Embryology had been studied and taught during the second half of the XIX century, both at Krakow University [see articles by Sliwa, (pp. 97-100, doi: 10.1387/ijdb.072319ls) and by Kilarski (pp. 101-107, doi: 10.1387/ijdb.072342wk) in this issue] and in the Main School and Warsaw Imperial University [see article by Tarkowski *et al.* (pp. 121-134, doi: 10.1387/ijdb.072376at) in this issue]. Other roots of 'Polish' Embryology should be looked for in Lwow (presently Lviv in Ukraine; see article by Ogorzalek), the second largest Polish University in the Austrian partition, and an important centre for the maintenance and development of Polish culture and science.

In the independent Poland, between the First and Second World War (i.e. in the period that lasted only for twenty years), embryological studies were continued and taught at five Universities, in the Chairs (Departments) of Embryology and Histology at Medical Faculties (see articles by Bartel and by Osuchowska), but also in the Chairs of non-medical faculties such as faculties of Philosophy and of Physical and Natural Sciences. Apart from three already existing Universities (Warsaw, Krakow and Lwow), a new University was created in Poznan, and the old University in Wilno (currently Vilnius in Lithuania) was re-opened after 87 years. World War II stopped official academic life altogether. All Universities were closed. Clandestine academic teaching soon started, but research was no longer possible. Human and material losses of Polish Science during the war were enormous, and the new beginnings in 1945 were even more difficult than in 1918, after the end of World War I.

During the period 1945-1989, when Poland was a member of the Soviet block, the number of teaching and research units, as well as the number of scientists involved in research more or less connected to Developmental Biology, undoubtedly increased overall compared to Poland before World War II. However, taking into account the dynamic development of biological sciences in the 'West' (the acronym coined in Poland for the description of all countries outside of communist interference), the real distance between Polish and Western Science has increased. One should add that financing for all basic biological sciences, including Developmental Biology, was extremely inadequate, and as a result of this policy or simply by default, the technological gap between Polish

and Western Science deepened alarmingly. Fortunately, contacts with foreign Science, exemplified by the number of Polish scientists studying abroad and participating in scientific meetings, were easier than in other East European countries, and we were able, at least intellectually, to keep the gap as narrow as possible. Help from our foreign colleagues in the form of financing fellowships and visits, and supplying us with basic chemicals, journals and books was invaluable, and will be kindly remembered by the older and middle-aged generations as an example of scientific solidarity in times of need.

However, due to poor working conditions, and also for political reasons, especially in the decade 1980-90 after the introduction of Martial Law in 1981, the suppression of the independent trade union *Solidarity* and the wave of repression, many young biologists decided to stay in the West rather than to return to Poland. This 'outflow' has continued even after Poland finally regained full independence in 1989, but now it is a part of a conventional brain drainage and the decisions to work abroad are not anymore 'for ever and without return' and are no longer considered to be '*a betrayal of the Country*'.

The increase over the past 50 years in the number of Polish academic centres teaching Embryology has surprisingly not been paralleled by an outburst of embryological research in Poland. This can be partially explained by the fact that Embryology/Developmental Biology has never been a compulsory part of the academic curriculum for all Biology students. However, the main blame factor is probably the over-fascination of young scientists with the supremacy of Molecular Biology which makes classic Embryology with its traditional experimental tools somewhat unattractive and unappealing. One can only hope that sooner or later, Developmental Biology, with its scope which is conceptually broader than traditional Embryology, together with state-of-the-art molecular techniques, as well as its growing impact on various branches of Medicine, will attract a new generation of Polish scientists. Perhaps this Special Issue of *The International Journal of Developmental Biology* may also contribute to this noble goal as well.

We have decided to arrange the articles presented in this issue into three groups: a) historical, b) reviews, and c) original contributions. However, it was not always possible to strictly maintain this distinction; this applies mainly to articles that begin with last century history and end with reviewing the present activity of the unit (group). The reviews are mostly "self-reviews" because we have asked only those group leaders (or members of these groups) who have worked on a given subject for years and have made important contributions to the field. Original contributions represent a sample of the present scientific interests of laboratories. Admittedly, there are several groups in Poland working with great success on developmental phenomena in plants. We regret not having been able to include papers from these groups in this Special Issue, essentially due to space restrictions which did not permit a satisfactory description of the history and present status of Developmental Biology of both animals and plants.

We are very grateful to Professor Juan Arechaga (and his Editorial Team) for his initiative to edit the 'Polish' issue of the *Int. J. Dev. Biol.* We hope that this Special Issue will help our foreign colleagues to learn about the background and the present status of Developmental Biology in Poland, and, perhaps, to find valuable partners for future collaboration.

Last but not least, we wish to thank all our colleagues who so constructively reacted to the invitation to publish in this Issue. We did our best to send invitations to all who, to our knowledge, have been involved in research which is an accurate representation of the different branches of Developmental Biology in Poland. The response to the invitation was overwhelmingly positive, both in terms of the number of articles and in terms of the promptness in manuscript preparation. The first reaction of the Editor-in-Chief of the *Int. J. Dev. Biol.* to this news was '*...good news, which may be too good!*'. The limited size of the issue did not permit us to accept all submitted manuscripts, including those presented by Polish scientists who currently live and work abroad. We express our thanks to all respondents, irrespective of whether their manuscripts have, or have not, been accepted and included into this issue. Thank you all, and please forgive the Guest Editors for being, perhaps, a nuisance.

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