

BIO PARK

CHARLEROI BRUSSELS SOUTH

news

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Biopark: varied roles

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ULB

UMONS
Université de Mons



Mood

The Aeropole business park is now home to some 150 companies that have created close to 3500 jobs. It plays host to a broad range of sectors and services which, together with the Biopark, form a hive of activity where 800 people work on cutting edge technology with high added value. This growth around a life sciences hub is a real opportunity for Charleroi: not only because of the Biopark's international reach and reputation for excellence, but also in terms of human capital, jobs, and training.

In order to stay up to date, researchers, engineers, professors, and doctors never stop learning, and this lifelong training requires adequate resources. But this research, whether fundamental or applied, also requires qualified technicians and staff with varying degrees of specialisation. This presents an excellent opportunity for our young people, or those left standing by the wayside in the wake of the downsizing and closures that have affected the region, to invest in the jobs of the future.

It is up to Charleroi's decision-makers (politicians, bosses, and unions) to work together to guarantee the success of this socio-economic regeneration.

*Rudy Pirquet,
SETCa Charleroi Secretary General*



Working at the Biopark: varied roles

"50% of those employed at the Biopark do not have a university background", we reveal in our previous issue. This statistic no doubt comes as a surprise to those readers who are convinced that the vast majority, if not all, of the Biopark's staff were PhD students and Doctors of Science or Medicine. We will introduce you to the men and women who make up the Biopark: researchers, of course, but also managers, lab technicians, administrative and technical staff... in total, around 800 people work on the Biopark, and you will meet some of them in this Biopark News.



RESEARCHERS

Immunology, embryology, bacteriology... Researchers all have decidedly specialist profiles, formed during undergraduate studies when they wrote their dissertation. The most motivated students would go on to study a doctorate and post-doctorate qualifications in Belgium and around the world, and then perhaps on to a career in industry or academia.

- *Thibaut Hallaert, new PhD student, p6*
- *Anthony Rongvaux, qualified researcher at the FRS-FNRS, p7*



LAB TECHNICIANS

Preparing experiments and reagents, carrying out routine tasks... Lab technicians play a major role in the life of the laboratory. And while many may end up as lab technicians following a science-based higher education, some choose a more roundabout route.

- *Elisabeth Dupont, ended up in research quite by accident, p4*
- *Mélanie Derock, recent graduate, p5*



MANAGER

Biomedical companies rely on staff with a broad range of skills: in addition to developing innovative quality products, they must also manage a team, allocate tasks, and check and sell products. Always driven by research!

- *Eric Mathieu, Bioengineer at MaSTherCell, p9*



ADMINISTRATIVE STAFF

Accounting, purchasing, tracking research reports or planning events: a range of administrative tasks are essential to keep the Biopark running.

- *Marilyn Boutchon, secretary, p8*



TECHNICAL STAFF

The Biopark's technical staff work behind the scenes to fix up equipment and maintain the facilities. Managing ventilation systems, entrances, building maintenance, and biological waste disposal all require versatile, responsive staff.

- *Michel Lakomy, multi tasking technician, p8*



Elizabeth Dupont, IBMM: "I learn by watching my colleagues work"



Lab technician



"My brother studied biology at the ULB, and he told me that they were looking for a technician to wash the laboratory equipment. I applied and got the job", remembers Elizabeth Dupont. That was

back in 1989, when the laboratories were in Rhode-Saint-Genèse, and Elizabeth Dupont, with her secondary education in clothing, began working part time at the ULB's Developmental Biology Laboratory.

The following year, she picked up another part time job in a nearby laboratory. "My

role was to manage and maintain the laboratory glassware, preparing stock of solutions and cultures, drawing an inventory of the lab equipment, and signing deliveries and hazardous materials, etc.", she explains. Elizabeth Dupont followed the team when it moved to Charleroi, and its new home at the Institute for Molecular Biology and Medicine (IBMM). In 2003, she was appointed as a full-time in the IBMM's Molecular Parasitology Laboratory.

"I'm still involved in the everyday management of the laboratory, whether preparing solutions, managing stock, or maintaining equipment. Over time, I have been given more independence and been trained in the techniques used in

With a background in sewing, Elizabeth Dupont ended up in molecular biology "by accident". 24 years later, she is enthusiastically working away in a laboratory.

molecular biology: extract plasmids from bacteria, DNA analysis using agarose gel, etc. I recently had the opportunity to be trained in protein induction of expression, production, and purification", Elizabeth Dupont tells Biopark News, "I really enjoy laboratory work. And even if I don't have a background in biology, I am good with my hands, passionate, helpful, and I learn as I go along by watching what my colleagues do. It's gratifying to feel that people trust me, and my work is much more varied today that it was when I began, 24 years ago. I don't miss sewing at all!"

Nathalie Gobbe





Mélanie Derock, CMMI:
"I'm learning a lot and doing
something different every day!"

Lab technician



Mélanie Derock has been a lab technician at the CMMI since October, when the 23 year old seized the opportunity to add to her CV and build her skills: "I only finished my degree at the *Haute Ecole Provinciale Condorcet* from Saint-Ghislain in June this year", she says. Her studies focused mainly on clinical chemistry, and

she completed a work placement at the Anatomical Pathology Department at the EpiCURA Hospital in Baudour. "It isn't a very topical field, or one that is studied much at school. I had to push to get a place there, and it was a real revelation: it was really interesting." When the CMMI got in touch, she didn't take long to make up her mind: "This job is a unique professional experience. When the call came through, I jumped at the chance."

New job, new skills: Mélanie Derock is still familiarising herself with the research themes and techniques used at the CMMI.

Mélanie Derock is a new arrival on the Biopark, and is still learning about her job at the CMMI. Her role combines her personal interests and professional experience.

"The *immunology* work and image analysis is a new experience for me, and I didn't know much about these techniques", she explains. "The work can be stressful, but it's also really stimulating. I'm learning a lot and doing something different every day!"

Variety at work is important to Mélanie, who is particularly happy that she can follow a sample from A to Z, as it undergoes different processes: "As a technician, you play an important role in processing samples. All the more so at the CMMI where we are responsible for the sample from beginning to end", she goes on. "The work at the CMMI is different to that in a standard clinical role: in other laboratories, we would only carry out one or two processes, whereas here we do everything. It's interesting to track the path a sample takes from beginning to end."

And the one hour commute to work from Tournai doesn't put her off: "I feel like I'm investing in something for my career and for myself. That's all that matters", she adds.

Natacha Jordens



Thibaut Hallaert, IBMM: "I am fascinated by the evolution of living beings!"

Researcher



Thibaut Hallaert has a smile on his face: he has just received a FRIA grant. He will continue the research he began as part of his Master's dissertation in the Bacterial Genetics and Physiology Laboratory of the IBMM. He was awarded the A.Sc.Br prize from the Science Faculty Alumni Association for his Master's, in recognition of the quality and scientific prospects of his work. "I was quite surprised to receive the nomination: I didn't even know that the prize existed", he remembers, "I only had two days to rewrite my dissertation in layman's terms! It was a bit of a rush, but I'm passionate about my work so it was alright in the end".

Thibaut Hallaert has just received a FRIA grant. His PhD will be a direct continuation of his Master's degree. Just one small step from student to doctoral candidate!

A passion he has held for a long time: "I was always interested in sciences, especially life sciences and questions related to evolution: how organisms evolve, why a given characteristic appeared, etc.". It made sense, then, that the young student studied biology, and bacterial physiology in particular: "It's fascinating!", he exclaims. "For example, the bacterial envelope forms an essential part of bacterial pathogenesis, as well as being where interaction between colony members takes place. In spite of this, the mechanisms that create it and the way that it works remain little understood. We still don't properly understand how this envelope appeared".

His research area falls under this theme: Thibaut is studying the effect on bacterial physiology when the *csrA* gene is removed. CsrA is a regulator that centralises a number of signals providing bacteria with information about their surroundings and their own condition, enabling them to adapt to the conditions that produced these signals. "In the absence of CsrA, bacteria present stunted growth and an abnormal structure, as if they were ill and unable to develop properly", he explains. "For my

dissertation, I managed to show that this deformity was the result of changes in the bacterial envelope: when the *csrA* gene is removed, the signal pathways for stress in the envelope are activated".

Thibaut will spend the next four years characterising this deformity and trying to identify its specific physiological origin. The FRIA grant is an opportunity for him to take his investigation into the mysterious world of bacteria and academic research a little further. "I have always been interested in research, so much so that I never really considered other career paths", he admits, adding, "I'm happy to finally be a full-time researcher, and I know it's a job that is hard to come by".

Natacha Jordens

Anthony Rongvaux, IBMM: "We need to set ambitious targets"



Researcher



With a doctorate in Biology from the ULB, Anthony Rongvaux is currently finishing his post doctorate research at the prestigious Yale University in the USA. Next spring, he will join the IBMM's Immunobiology Laboratory as an FNRS research associate. A laboratory that he knows well, having completed his doctorate with the ULB. "I left the IBMM in 2006, and things have changed a lot since then: immunology in particular has become a major field at the Biopark that brings together biologists, chemists, doctors, etc. and all of these different disciplines feed into one another", he remarks. "Today, all of the basic techniques required by immunologists are in place, and the researchers enjoy

Recently appointed a research associate at the FNRS, Anthony Rongvaux will join the IBMM next spring with a specific objective: to continue the immunology research he began at Yale University.

the cutting edge infrastructure, facilities, services, and expertise associated with a core facility." He stresses that "I met a few people at the ULB who were willing to help. The enthusiasm is tangible".

Anthony Rongvaux came into research *naturally*, even if when leaving high school he was more interested in ecology, biodiversity, and evolution. During his studies at the ULB he discovered immunology and *his* path: he wanted to understand how the immune system worked and pushed ahead with a doctorate, and then post doctorate studies at the IBMM and then Yale. "I want to continue studying how the immune system affects the progress of a virus or cancer in human patients. The IBMM will enable me to continue this research, so it's a logical move." The researcher is working on mice

models with a human immune system, as well as on human samples, in order to find answers to issues facing doctors.

Just a few weeks away from leaving the USA, Anthony admits to feeling somewhat apprehensive, "I felt the same way in 2006 when I left the ULB, and I managed to move on quickly", he remembers. "I learned a lot at Yale where I have worked in a world-leading environment. I also learned that we need to set ambitious targets, ones that will change the way we think while being achievable nonetheless. I am joining the IBMM with the desire to tackle these important questions."

Nathalie Gobbe



Marylin Boutchon, IBMM:
"I like variety"

Michel Lakomy, Infrastructures:
"We feel useful"



Administrative staff



After 9 years at the Parentville site, Marylin Boutchon settled in Gosselies in 2004, where she is a secretary at the IBMM for the Molecular Biology of the Gene Laboratory and Molecular Biology Department.

Managing accounts, supporting the IBMM's internal communications, reserving meeting rooms, tracking orders, administrative support for the Masters BBMC (Biochemistry and Molecular and Cellular Biology), organising research conventions, updating the DBM website... the list goes on. The work carried out by Marylin Boutchon, a secretary at the IBMM, is varied to say the least.

"Even if it can be difficult to juggle jobs that come from everywhere at once, I really enjoy this way of working: I like variety, and that's what I really love about this job", the Thuin resident enthuses.

After qualifying as a secretary and a spell at a bank in Brussels, Marylin Boutchon cut her teeth at the ULB's Parentville site, before landing on the Gosselies campus in 2004. In addition to her work as a secretary, Marylin is also an active member of the ULB Social Committee.

"I'm the one who organises events on the Gosselies campus. Every year, with help from my colleague, Isabelle Decot, who is also on the Social Committee, I plan the New Year Drink and the PhD Student Dinner in Parentville."



Technical staff



Before the Institute for Molecular Biology and Medicine (IBMM) building was even complete, Michel Lakomy (Infrastructures Department) arrived at the ULB in 1999 to work as an HVAC technician.

In a nutshell, the Infrastructures Department, where Michel Lakomy works, is responsible for making sure that the IBMM building runs like clockwork. Power cuts, air-conditioning problems, research area ventilation issues... the team acts quickly and effectively to stop campus users from being affected by these technical hitches. Their purpose? To take care of building maintenance and repairs.

"Alongside three colleagues – Joël, Stefano, and Thibaut – I am often on call", details Michel, an electrician by trade. "This means that for one week during every month, I can be paged at any time of day, 24/7. It could be a Sunday or after midnight during the week: when I'm paged I have to get to the Gosselies campus as quick as I can."

"I'm proud to work here", Michel goes on. "We feel genuinely useful because we know that the scientific and financial stakes are high. We make our own little contribution to the researchers' success. Over 15 years, I've seen students go on to become researchers or professors, it's great".



Eric Mathieu, MaSTherCell: "Cell culture at every step"

Manager



Bioengineer, Eric Mathieu is the MaSTherCell operations manager, and supervises a team of fifteen people.



Eric Mathieu is more than familiar with the pharmaceuticals industry, after all, he has been part of it for over 15 years, and his professional experience has enabled him to explore different aspects of the pharma sector: process development and transfer, industrialisation, and manufacturing. He joined GlaxoSmithKline as a bioengineer in 1997, following three years in the food industry with Villers Monopole. Five years later, a new challenge led him away from GSK and Belgium, and he moved to Baxter in Switzerland. He began his stint with Baxter as a production supervisor, before

being appointed production manager for recombinant proteins for haemophiliacs.

A few years later he began to hear the call of home, and a project launched by a friend proved the deciding factor. He moved back to Belgium to work at a new SME, Artélis, developing bioreactors. In 2011, he left the company (since merged with another) and became a consultant at GlaxoSmithKline. "Cell culture has been the core of my working life", Eric Mathieu recalls, "At GSK, I was responsible for preparing the bacterial and cell culture activity for a new production facility; I had to install the hardware and automation protocols for the reactors".

It was at this point that MaSTherCell hired him as operations manager. "I have a very broad role: I ensure that we can deliver the client the product they want, ensuring that quality standards are complied with. Initially, I put the architecture that enables this goal into place: launching production facilities, recruiting and training a team, securing permits, setting up quality procedures, etc. and now I'm working mostly on the production schedule and the feasibility of client requests." In 2013, the MaSTherCell

laboratories were GMP certified, and the production of pharmaceutical substances ready to be injected into patients will begin in the coming weeks.

Eric Mathieu coordinates a team of over 15 staff: lab technicians, biologists, industrial chemists, bioengineers... and more. "They are all qualified in secondary or higher education (university or other), and we took them on because they had significant experience in pharma or stem cells. With this being a new sector, it is not yet possible to find professionals with 5-10 years experience in cell therapy production", Eric Mathieu explains. "We are now planning to take on interns to spot and train the future talent that may one day join our team."

Nathalie Gobbe

Biopark Training: building fresh talent



Within the *Biopark ecosystem*, Biopark Training performs skills transfer role. It provides an increasingly wide range of courses tailored to suit the needs of the sector that is always on the lookout for specialist profiles. Its strategy is rooted on the Biopark's skills, which it helps to develop in turn. Conversation with Arnaud Termonia, Director Of Biopark Training.



SINCE IT OPENED IN 2009, BIOPARK TRAINING HAS PROVEN ABLE TO ADAPT TO SUIT THE SECTOR'S NEEDS. WAS THAT ITS INITIAL GOAL?

Arnaud Termonia : Certainly. Our initial goal was to build upon the Biopark's existing skills and knowledge and transfer it to all those involved in the biomedical

sector. Over the past four years, we have given 77,000 hours of training to over 2400 people, so the demand is clearly there and we are fulfilling our role.

HAS THE DEMAND CHANGED?

A.T. : It never stops changing. In the beginning, we mainly provided technical modules in molecular and cellular biology. We then started offering courses in immunology and, with the arrival of the CMMI, imaging. We have recently launched our first cycle of cell therapy courses, which was a success: 250 participants with industrial and academic backgrounds, and over ten speakers from various universities and businesses. Nobody was missing! We now also offer management courses such as STRATEGIO.

IS THE INVOLVEMENT OF SPEAKERS WITH DIFFERENT BACKGROUNDS TO PROVIDE A BROADER OUTLOOK TO TRAINEES WHAT MAKES BIOPARK TRAINING SO SUCCESSFUL?

A.T. : It is one of the main factors. The Biopark forms an ecosystem where people interact to foster research and development in the life sciences. We need everyone: businessman, researchers, technology transfer, and training teams. Everyone has a vital, yet unique, role to play. Our aim is to *harvest* these skills and share them with others who could then in turn help to build the *Biopark ecosystem*.

AND WHO IS THIS FRESH TALENT MADE UP OF?

A.T. : Students at Biopark Training form an extremely varied group. We have teaching staff from higher education institutions, students and jobseekers: the sector's workforce of the future. But we also have qualified managers, technicians, and researchers who come to refresh their knowledge in a given field. They come from SME or large businesses, or even universities. Our students are a fair representation of the Biopark community, in fact.

IS TRAINING NEEDED TO REMAIN COMPETITIVE?

A.T. : I think so, yes. The sector is looking to recruit people with the knowledge and skills in innovative fields needed to stay on the cutting edge. This means that constant training is required, as well as knowing the latest developments. Biopark Training definitely has a role to play in this dynamic.

Natacha Jordens

NEW COURSES

Always aiming to offer innovative training solutions, Biopark Training continues to launch new courses.

One of these courses, looking at the different aspects of *quality* in R&D, began in early December. A new session is already planned for February 2014.

Additionally, and in line with the standardisation of Belgian and European biobanks, in March 2014 Biopark Training will offer a *biosampling* course on the use and management of human biological samples in clinical research.



Epigenetic therapy: how to identify new targets?

Eric Bellefroid – Developmental Genetics Lab, IBMM - was awarded funding for the EPIGENE project by FIRST International 2013.

The EPIGENE project, which received a total of €378,723 in funding from the programme FIRST International, is intended to identify potential new targets for epigenetic therapy. The project is sponsored by DIAGENODE, a biotech company based in Liège at the ULg's GIGA business park that develops, manufactures, and sells instruments, kits, and reagents: antibodies in particular. The research will be carried out in partnership with the Neurobiology and Development Laboratory, a CNRS research team headed by Philippe Vernier, where Nathalie Bessodes, the researcher benefiting from the FIRST mandate, will spend her internship.

Epigenetic regulation of gene expression is a dynamic, reversible process that plays

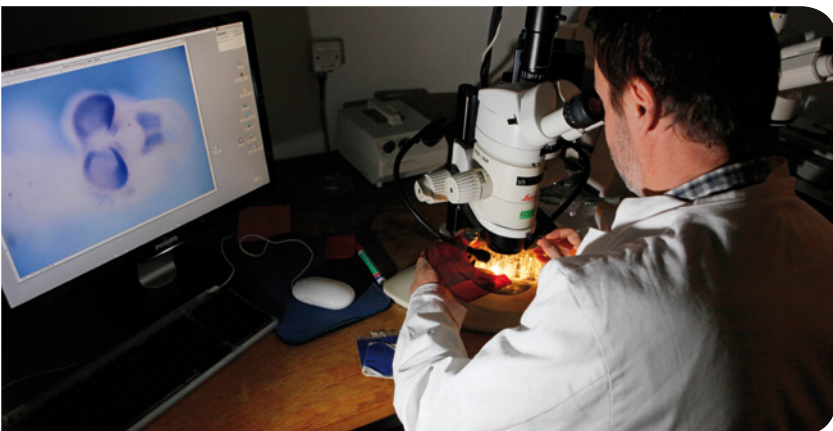
an essential role in cell processes during development. On a molecular level, epigenetic regulation leads to changes in DNA and histones, the proteins that package DNA. Recent research has shown that epigenetic modifications are disrupted in a number of human diseases, including those affecting the nervous system and some cancers.

Work recently carried out by the two partner laboratories involved in this project have shown that the genes *prdm12* and *prdm13*, coding for transcription factors with histone methyltransferase activity, play an essential role in the specification of certain interneurons in the spinal cord. However, the mechanisms that these two factors use to control the behaviour of neural progenitors

in the spinal cord, as well as their role(s) in other parts of the developing nervous system, remain unknown.

The aim of the EPIGENE project is to obtain high quality antibodies to identify the targets of these factors on a genomic level, using chromatin immunoprecipitation techniques. These antibodies will act not only as significant tools in our understanding of the physiological role played by these factors, but also in their identification as potential diagnostic targets in neurological disease.

Frédérique Margraff



The **FIRST International** programme is funded by the Service Public de Wallonie – DG06, and is designed to make it easier for companies to access scientific research that may help them to grow, all while providing young researchers with training in emerging technologies, skills that will be shared within the company that sponsors and co-finances the project. The programme also aims to provide researchers with experience of international scientific partnerships, with a minimum of 6 months of the 3-year project being spent in a foreign research centre.



BONE OR FAT: THE P2Y13 RECEPTOR GOVERNS THE BALANCE

Bernard Robaye (**IRIBHM** at the IBMM) has spent 20 years researching P2Y receptors, a family of proteins involved in inter-cell communication. The team is currently paying special attention to the P2Y13 receptor and its role in bone metabolism. In collaboration with the University of Sheffield, the research team has already shown that when P2Y13 is absent in mice, the number of osteoblasts – the cells responsible for bone development – falls.

In a recent issue of *Stem Cells*, the team revealed some new information that explains this decline in osteoblasts. Galadrielle Biver, a PhD student within the laboratory, saw that the falling numbers of osteoblasts was accompanied by a parallel increase in fat cells, or adipocytes. Both kinds of cells are derived from the same cell precursor, and she suggested that P2Y13 promotes the production of osteoblasts and limits the production of their adipose cousins. She is now working to understand the role played by another receptor (P2Y12), which is similar to P2Y13 and may fulfil a similar role.

This imbalance favouring adipocytes has also been observed in cases of osteoporosis. A better understanding of the role P2Y13 plays in bone metabolism may, eventually, lead to new treatments for this disease.

N.J.

