

Connecting Life Sciences

VIENNA Highlights Fall & Winter 2018

Life Science City Vienna:

30 companies you must know
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Innovation made in Vienna:

Software from Agfa HealthCare Vienna serving the global healthcare IT market
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Biotech, Pharma & Medtech growing in Vienna

Vienna is home to a growing life science community. As Austria's driving force, the city hosts 554 life science companies, research institutions and other core organizations that together employ 37,595 people. Annual revenues, which have reached 12.2 billion euros, a total of 4,602 publications in international journals and 84 ERC grantees reflect the significance of this sector.



• 2017 • 2014 • 2012

554

480

403

9.1

Organizations

Employees (headcount)

Revenues (in €bn)

www.LISAvienna.at

Vienna Life Science Report at

Download the NEW

or order a free copy at

office@LISAvienna.at.

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Gerhard Hirczi, CEO Vienna Business Agency viennabusinessagency.at Vienna is safe, Vienna is stable. And on top of this, Vienna is also the most liveable city in the world. To make sure it stays that way, the city of Vienna is taking a proactive approach and the Vienna Business Agency is providing 360-degree services for businesses. We look forward to welcoming everyone who has come to implement new ideas here in Vienna. The city of life and sciences is ready to accompany you on your way to success."



Dear readers!



We are pleased to introduce the fourth Vienna Life Sciences Report in this newsletter. Since 2010 we have been summarizing key facts on Vienna's thriving life science community in addition to providing a directory.

The life sciences sector is growing within the heart of Europe. Our new report refers to a total of 554 life science organizations in Vienna, which, in 2017, employed 37,595 people. This represents significant growth compared to 35,730 employees in 2014. The annual sales figures of Vienna's life science companies have grown by 23 percent to 12.2 billion euros.

As you will learn in more detail by reading the report, Vienna provides an excellent hub for start-ups. Entrepreneurs from all over the world are invited to join in. Recently, digital health solutions and biotech-based niche products and services have become the primary focus among our newcomers and complement business cases in drug development.

Vienna is not only Austria's most important life science hot spot, it is also highly appreciated by global players. Indeed, most of the top 20 biotech, pharma and medtech companies based on worldwide sales have created a presence in Vienna. Research, development and manufacturing are on the rise. In 2017, these companies invested almost 750 million euros in R&D.

The life sciences are clearly of great importance to Vienna's economy. Pharmaceutical products rank as the city's largest exports and the biotech sector is known to invest more in R&D than any other business sector in Vienna. To promote cutting-edge scientific research as well as life science companies at all stages of the value chain, Austria and the city of Vienna offer a 360-degree support network. Contact the LISAvienna team for personalized advice about the opportunities that will propel your company upward to the next level in Vienna.

This Highlight edition not only features the new Vienna Life Science Report, but also updates you on platform technologies and introduces some innovative research reagents, kits and IVDs made in Vienna.

Enjoy reading and do not hesitate to contact us via e-mail or telephone or in person at the trade shows and partnering meetings we plan to attend over the next few months.

Peter Halwachs and Johannes Sarx LISAvienna Executive Board

Meet us at trade shows & exhibitions

BIO-Europe 2018

Copenhagen, November 5-7, 2018

MEDICA & COMPAMED 2018

Düsseldorf, November 12-15, 2018

Arab Health 2019

Dubai, January 28-31, 2019

HIMSS 2019

Orlando, February 11-15, 2019

BIO-Europe Spring 2019

Vienna, March 25-27, 2019

BIO International Convention

Philadelphia, June 3-6, 2019

in cooperation with:





We reserve the right to make changes.

Need a lab for your start-up in Vienna? Please contact the LISAvienna team!



LISAvienna - Connecting Life Sciences

We offer core services at no charge

Joint life science platform for the advancement of life sciences in Vienna









CitYof "Vienna

Personalized support for innovative biotech, pharmaceutical and medical device companies

- in Vienna.
- that develop and market
- new products, services and processes

Connecting companies with development partners and key customers.



Your partners at LISAvienna (Itr): Andrea Jan Coleselli (Administration, Controlling and Events), Johannes Sarx (Managing Director), Brigitte Tempelmaier (Project Manager Marketing & PR), Peter Halwachs (Managing Director), Martin Mayer (Technology Expert Medtech), Jürgen Fuchs (Technology Expert Biotech & Pharma)

Contact us and benefit from our services



Information & Consulting:

Tips and contacts relating to sponsorship, private financing options, lab space in Vienna, development partners, leading customers and internationalization



Networking & Matching:

Contacts for an improved exchange of experiences and knowledge transfer as well as contact with development partners, leading customers and investors worldwide



Expertise:

Analyses, background information, reports and studies relating to life sciences in Vienna



Marketing:

Electronic and printed news items from the field of life sciences in Vienna

Newsletter & Tweets

Stay updated on the hottest news from the life science city Vienna!
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Vienna: Austria's prime location for life sciences

Industry at a glance



Life Science Report Austria 2018: A detailed analysis of nation-wide data on the life sciences

www.lifescienceaustria.at

Key figures on academia



Some recent headlines

Boehringer Ingelheim Regional Center Vienna: Operating performance increased by 25 percent

The research-driven pharmaceutical company, Boehringer Ingelheim Regional Center Vienna (RCV), can look back on another exceptionally successful financial year, in which operating performance increased by 25 percent to 1,555.4 million euros (2016: 1,243.1 million euros).

VAMED: From polyclinics to university hospitals – VAMED continues to expand its international presence

In 2017, with an EBIT of €76 million, the internationally leading healthcare provider VAMED achieved its twelfth record year in a row. Order intakes exceeded the previous year's figures by 8 percent and amounted to €1.1 bn. By 2020, VAMED plans to expand its global presence to 100 countries.

Shire: BioLife Austria turns into BioLife Europe

To improve the supply of life saving drugs for rare diseases made in Vienna, Shire's BioLife department has been extended through the take-over of 17 plasma donation centers in the Czech Republic and Hungary. This step is of strategic importance to Shire's Center of Excellence in Vienna.

Why Vienna?



growth and employment, but also benefit society as a whole."

LifeNet Health to set up its new European headquarters in Vienna

Vienna is a great place for life sciences companies. Recently, LifeNet Health set up its new European headquarters in the city to improve its efficiency in supplying orthopedics, spine, sports medicine, plastic, dental and CMF allografts to surgeons within Europe. The Viennese headquarters will be able to provide Europe-based hospitals with transplants for the most common applications within one to two days.

Are you interested in setting up a presence in Vienna, too? Contact the LISAvienna team. We will introduce you to all the relevant partners ready to help you open a branch office, labs or a manufacturing facility in the city.

Vienna is proud to host award-winning enterprises!

SzeleSTIM to win Pioneers'18 challenge

SzeleSTIM is focusing on wearable bio-electronic devices for Auricular Vagus Nerve Stimulation, allowing minimally invasive and non-pharmacological pain therapy adapted to the individual patient. Winning the Pioneers' 18 challenge will facilitate making this innovation available internationally.

Tetragon honored with WINTEC-Award

Tetragon, a TU Wien spin-off, has invented a completely new kind of Braille display, which is user-friendly, cost- effective and extremely portable. Users will be able to read the text on the inside of a rotating ring. This innovative solution won its developers the WINTEC Award granted by the Austrian Federal Ministry for Labor, Social Affairs, Health and Consumer Protection.

tetragon.at

szelestim.com

Bulletin Board





ImageBiopsy Lab: Official partner of Nuance Al Marketplace

ImageBiopsy Lab is now able to deploy algorithms into a platform so as to access and share imaging data across organizations, desktops and mobile devices. Radiologists can then easily select and use these tools without having to acquire new reporting or image-sharing systems or change existing workflows.

cogvis: New investors on board to address the European care market

The €700,000 investment will allow more elderly people to benefit from the company's intelligent fall-sensor system called fearless, as the sales force throughout Europe will be significantly upgraded. This intelligent, contactless fall sensor not only detects falls, but also helps prevent them.

Grapevine World and Austrian Health are launching a pilot project for their Care Manager Portal

Grapevine World announces a futuristic pilot project for medical data: The Care Manager Portal 'Medakte' will medical data: The Care Manager Portal 'Medakte' will provide patients with a way to structure their health issues better, optimize medical procedures and obtain opinions from national and international specialists.

www.grapevineworld.com

Hookipa and Gilead enter into a collaboration and license agreement to develop immunotherapies for two major chronic infectious disease indications

This deal grants Gilead exclusive rights to Hookipa's TheraT® and Vaxwave® arenavirus vector-based immunization technologies for hepatitis B and HIV. The total potential deal value exceeds **\$400 million**, including upfront and milestone payments, plus R&D funding.

TAmiRNA receives FFG EARLY STAGE funding for "PATH"

PATH stands for "Project for Advancing the Application of MicroRNAs as THeranostic Biomarkers". The goal is the creation of a solid basis for the development and application of microRNAs as non-invasive ("liquid biopsy-based") biomarkers for guiding therapy in complex diseases.

MacroArray Diagnostics to be awarded € 2.5 m EU funding

The company has been selected as the only Austrian life sciences company to be funded through the EU's most recent Horizon 2020 SME phase 2 call. The funds will allow automated processing solutions for the company's revolutionary ALEX ® - Allergy Explorer test platform to be developed.

Themis: CEPI partners with Themis Bioscience to advance vaccines against Lassa Fever and MERS

The investment of **up to \$37.5 m** will enable funding for Themis' development efforts over a five-year period. This is the first company agreement that CEPI has signed since it was established pany agreement that CEPI has signed since it was established in 2017 as a coalition to finance and coordinate the developing of new vaccines for infectious disease epidemics.

Lexogen and Bluebee collaborate to streamline QuantSeq-UMI sequencing data analysis pipeline

This collaboration offers QuantSeq users utilizing Unique Molecular Identifiers (UMIs) the opportunity to analyze samples and interpret data in a convenient and rapid manner without the need for prior bioinformatics experience. Software activation codes are included in each QuantSeq-UMI kit.

PhagoMed: Viruses against bacteria

An alternative approach to combat antibiotic-resistant bacteria has attracted more than €4 million in grants and private investments for PhagoMed. The company develops virus-(phage-)based therapies against bacterial infections at the Vienna BioCenter. Three drug candidates are in the preclinical stage.

Excellent life sciences in Vienna!

Recently granted ERC funds go to:

- Stefan Ameres, IMBA, OeAW
- Maria **Baltazar** de Lima de Sousa, Uni Vienna
- Alwin Köhler, MedUni Vienna, MFPL
- Claudine **Kraft**, University of Vienna, MFPL
- Stefan Kubicek, CeMM, OeAW
- Nuno Maulide, Uni Vienna
- Magnus Nordborg, GMI, OeAW
- Anna Obenauf, IMP
- Eva Oburger, BOKU
- Aleksandr Ovsianikov, TU Wien
- Jillian **Petersen**, Uni Vienna
- Bojan Zagrovic, Uni Vienna

Congratulations!





Get connected @





(@lifesciencevie)

Life Sciences City Vienna:

Vienna's biotech community is particularly rich in platform technologies that are leading to highly innovative products and services. We present 23 promising technologies in the table below. For additional information, check out the websites included. Moreover, LISAvienna will be happy to introduce you to the general management and business development representatives of all the companies listed here.

Company	Platform Technologies
Aelian Biotechnology GmbH www.aelianbio.com Enabling single-cell drug discovery	Single-cell CRISPR screening: combination of CRISPR screening with single-cell sequencing to enable genetic screening for complex biological phenotypes by mapping the impact of thousands of guide RNAs on the global transcriptome at single-cell resolution
Accanis Biotech F&E GmbH & Co KG www.accanis.com mRNA-based therapeutics for the treatment of common, localized diseases	IVT mRNA technology: In vitro transcribed mRNA with broad and long-acting therapeutic potential surpassing protein-based therapeutics
AFFIRIS AG www.affiris.com Specific active immunotherapies for treatment and prevention of chronic diseases.	AFFITOME®: Technology platform for generating specific active immunotherapies (SAIT); carrier proteins triggering T-cell help are covalently linked to short synthetic peptides that function as B-cell epitopes and have altered amino-acid sequences for "molecular mimicry"
Allcyte GmbH www.allcyte.com Defining drug action at single cell resolution	Pharmacoscopy high-content imaging platform: Image-based quantification of drug response in primary patient samples with single cell resolution for applications in translational oncology e.g. to evaluate drug candidates prior to clinical studies and personalized medicine, i.e., to select the right drug for the right patient
Biomay AG www.biomay.com Innovative allergy therapeutics, GMP contract manufacturing & allergen shop	PCFiT™ (Peptide Carrier FusIon Technology): Highly specific allergy immunotherapy platform with an unrivaled safety profile
Blue Sky Vaccines GmbH www.blueskyvaccines.com Immunotherapeutic vaccines against cancer	Influenza based vectors inducing both innate and adaptive immune responses against tumors
EUCODIS Bioscience GmbH www.eucodis.com Tailored biocatalysis solutions especially for the biophar- maceutical, chemical and cosmetics industries; Non-GMP contract manufacturing	CTAT - Enzymatic Drug Conjugation: Novel linker system covalently attaches a recombinant antibody or antibody fragment to a functional payload molecule In Vivo Recombination: Highly efficient technology platform for creating enzymes with new or improved functions; also suitable for other proteins
Evercyte GmbH www.evercyte.com Highly relevant and standardizable human in vitro model systems and production hosts	Bioassay development: Platform using relevant human cell cultures from various donors and tissues for the establishment of bioassays representing the in vivo situation Cell line establishment: Platform using human telomerase and cell cycle regulators for generating relevant and standardizable in vitro model systems for pre-clinical testings and for production of complex biopharmaceuticals
Hookipa Pharma Inc. www.hookipapharma.com Active immunization therapies for infectious diseases and cancer	Vaxwave®: Safe, replication-deficient Arenavirus vector to fight infectious diseases TheraT®: Safe, attenuated replicating Arenavirus vector to combat cancer as a single agent or in combination with other therapies
Marinomed Biotech AG www.marinomed.com Innovative immunological and antiviral treatments	CARRAGELOSE®: Platform for developing therapies that target more than 200 different respiratory virus strains; based on polymers derived from red seaweed MARINOSOLV®: Platform enabling novel, stable, aqueous formulations of hardly soluble compounds such as corticosteroids, allowing a faster action onset and a better bioavailability
Miti Biosystems GmbH www.mitibio.com Polycyclic peptide libraries for the discovery of peptide drugs and mimotopes	RiPP platform technology: Targeted drug discovery tool that enables tapping the nearly unlimited structural diversity of randomized Ribosomally-synthesized and post-translationally-modified peptides (RiPPs)
Nuvonis Technologies GmbH www.nuvonis.com Cell banks and technical support (process development) for vaccine production	Certified animal component free Vero Cell Banks (GMP), suspension Vero and avian cell lines for viral vaccine development and production
Origimm Biotechnology GmbH www.origimm.com Antigen discovery for the development of breakthrough therapies	ProVaDis (Pro tection-based Va ccine Dis covery): Antigen discovery platform that selects molecules through reverse functional screening using protective antibodies, and allowing for next-generation vaccines
TAMIRNA GmbH www.tamirna.com Validated diagnostic solutions using microRNA biomarkers	microRNA biomarker: Highly efficient platform for serum/plasma microRNA Biomarker Discovery and Validation; RNA profiling in complex tissue or single cells
The Antibody Lab www.bestcellmabs.com Immunoassays and preclinical biologics	BESTcell: Very high yield, stable cell lines in 3 weeks. Fixed price mAb production service for IVD and preclinical research. For CMOs, biotechs, IVD and pharma: Cell lines can be transferred under a license with an affordable one-off licensing fee. Immunoassay and reagents: High quality products for third parties
Themis Bioscience GmbH www.themisbio.com Immune modulation therapies for emerging and specialist indications	Immune modulation vector: Measles vector platform for directed, effective education of the immune system via antigen-presenting cells; able to incorporate large recombinant genes; suitable for vaccines and novel anti-cancer approaches
Valneva SE www.valneva.com Innovative life-saving vaccines for infectious diseases	EB66® cell line: Highly efficient platform for large-scale vaccine production; based on embryonic stem cells; for manufacturing human and veterinary viral vaccines

ability profile

IC31@: Totally synthetic adjuvant to improve vaccine response with a very good safety and toler-

Both lists are not exhaustive.

30 Companies you should know

Research and wet lab diagnostics in human and veterinary medicine require a diverse and growing number of research reagents, kits and IVD. Below, we introduce 13 innovative companies that are developing or manufacturing these types of products in Vienna. If you are interested in finding out more, we invite you to explore the links we have included and are happy to connect you with these innovative companies.

Customized or fully validated IVDs for: - Biomarkers/ metabolites using mass spectrometry - Genetic testing incl. digital PCR/ Next-Generation Sequencing - TDM (therapeutic drug monitoring): (psychoactive)-drugs, antibiotics, other small molecules OTC diagnostic test kits for family planning, infections and allergies Professional diagnostic test kits for infectious and cardiac diseases, cancer and other health related complaints
Professional diagnostic test kits for infectious and cardiac diseases, cancer and other health
Recombinant allergens: - Alder, birch, hazel, mugwort, ragweed pollen allergens - Dust mite, insect (Hymenoptera) venom, latex, mould allergens - Apple, carrot, celery, fish food allergens
IVD: Allergology, autoimmune diseases, bone and mineral, cardiac marker, endocrinology, gastro-enterology, hemostasis / coagulation, infectious diseases, oncology, genetic tests, transplant Biomedica Immunoassays: Testing services and biomarker ELISA for osteology, cardiovascular biology, nephrology, oncology, oxidative stress, glycan profiling.
Cells: Telomerized human somatic cells, adult stem cells and IPS cells, cell panels from specific tissues and donors Cell culture media: Ready-to-use media, basal media & supplements including growth factors and cytokines In vitro bioassays: Telomerized human somatic cells, growth factors, bioassay-setup
Real-time PCR kits and assays for detecting bacteria, fungi, parasites, viruses Kits for PCR-based genotyping of bacteria and viruses Quantitative standards for selected species Control assays with DNA or RNA targets
Tools for RNA analysis: - Whole Transcriptome Library Prep Kits - Expression Profiling Library Prep Kits - Targeted RNA-Seq Library Prep Kits - Metabolic RNA Labeling Kits - RNA Extraction and cDNA Amplification Kits - Spike-In RNA Controls - Modules, Add-ons, Data analysis and Support tools
ALEX® Allergy Explorer: First in vitro multiplex allergy test allowing simultaneous measurement of total IgE (tIgE) and specific IgE (sIgE) against a plethora of allergen extracts and molecular allergens; covers 99% of all routine diagnostic needs
Mycoplasma culture media: Ready-to-use for testing, liquid culture or precast solid plates Mycoplasma reference standards: Comprehensive portfolio, accepted by EMA and FDA for NAT validation Mycoplasma antigen preparations for manufacturing serodiagnostic tests
osteomiR™: Kit/service for quantifying of 19 validated bone biomarkers in serum to assess the short-term fracture risk thrombomiR™: Kit/service for quantifying of 10 proprietary platelet microRNAs in plasma, for the in-vivo analysis of platelet reactivity and the diagnosis of platelet disorders toxomiR™ service: microRNA biomarker panel in serum/plasma to detect acute injury in 8 organs to monitor safety risks in drug development as well as toxicant exposure
Global as well as special coagulation tests: One of the most comprehensive test portfolios in the world ADAMTS-13 testing: Autoantibody, antigen and activity tests in ELISA format plus the new and innovative screening tool TECHNOSCREEN ADAMTS-13 Activity for the easy & rapid estimation of ADAMTS-13 activity levels in human citrated plasma; takes less than 30 minutes
Invitrogen™ Immunoassay solutions for protein quantitation Coated ELISA kits: Ready-to-use, lowest possible inter- and intra-assay variability, highest possible lot-to-lot consistency Uncoated ELISA kits: Reagents needed to coat-your-own plates and run the assay, easy-to-use, flexible and low-cost kit configurations ProQuantum™ high-sensitivity Immunoassay kits: High sensitivity and broad dynamic range, only 2–5 µL of sample required simple workflow without wash steps, for any qPCR instrument ProcartaPlex™ multiplex Immunoassay kits: For simultaneous measurement of up to 80 protein targets per 25–50 µL sample using Luminex xMAP® technology, antibody-based, magnetic bead reagent kits, available as pre-configured multi-analyte panels, custom designed multi-analyte panels and single-analyte kits Immunoassay Custom Products & Services: Designed to suit unique requirements, highly specific, fully validated

detection of up to 48 alleles

targeted detection of SNPs and CNVs

Develops, manufactures and worldwide distribution of in vitro diagnostic tests (IVDs) for efficient and reliable diagno-

sis of inherited diseases, genetic predispositions, pharma-

cogenetics, and oncology

PCR products to wild-type and mutant-specific probes immobilized on a membrane, simultaneous

RealFast™ Assays: TaqMan®-based real-time PCR single and multiplex assays for fast and

Innovation made in Vienna: Software from Agfa HealthCare Vienna serving the global healthcare IT market



Agfa HealthCare is a global leader in the fast-growing market of integrated IT systems offering healthcare facilities a seamless flow of information and enterprise-wide integrated workflows for patient records. Focusing on German-speaking countries, the market-leading ORBIS hospital information suite runs the daily business of more than 800 hospitals, whereas IMPAX EE is the most often used picture archiving and communication system (PACS). For the global Enterprise Imaging solution, Vienna provides a number of core components.



Vienna's R&D site is one of seven international centers where key components of Agfa's solutions are developed. More than 110 IT professionals in R&D are working on two strategic directions: the health-care information systems division, where more than 40 products of the ORBIS platform are developed, and the medical image management field, where IM-PAX EE and key components of the global Enterprise Imaging solution are engineered.

Healthcare Information Systems

One of the products of the ORBIS Hospital Information System developed in Vienna is the ORBIS ICU-Manager. It enables the electronic documentation, display and print of medical data acquired from intensive care units. Medical data includes physical measurements from external medical devices, which can be connected to the ICU-Manager. The documented data can be used to support clinical

workflows and to review trends in order to support diagnostic and therapeutic decisions.

One recent project from the Vienna R&D team is focused on developing a "Fluid management component," which automatically collects data from hundreds of external infusion pumps. This significantly reduces manual documentation work in intensive care documentation.

Medical Imaging

In the medical imaging domain, the Vienna R&D team is developing essential parts of Agfa's Enterprise Imaging solution that extend medical imaging from radiology to other –ologies like cardiology, pathology, etc. Additionally, the market-leading PACS solution IMPAX EE is developed and maintained on this site. Another key focus is the research and productization of image-processing algorithms to improve the

speed and quality of diagnosis. For this purpose, Agfa HealthCare Vienna has been partnering successfully with the VRVis Forschungs-GmbH for many years. This research collaboration is powerful, not only in inventing new image processing methods, but also in keeping the productization period short and effective. The current research proposal is to use Artificial Intelligence to help radiologists detect specific pathologies in medical image data. (see box)

The healthcare IT business has shown a steady growth over the past years and is expected to increase for many more years to come. Agfa Health-Care Vienna is perfectly suited for driving this growth and this is why their R&D investments are expanded yearly.

global.agfahealthcare.com/dach

Why Vienna?



Peter Steiger
IITS R&D Site
Representative



Carsten Schlichting HCIS R&D Site Manager Vienna

Agfa HealthCare Vienna

We have an international team of experts working in our city, many of whom have moved to Vienna and appreciate the high living standard here. As a company, it's important to us that our employees live in an attractive environment. Another significant value is the concentration of research institutes and universities, which allows us to connect our business to related research work."



Agfa HealthCare validates its first radiology Al algorithm in Dubai

The machine-learning algorithm, developed via a successful collaboration between the Vienna R&D center and the VRVis GmbH, is being funded by the Austrian Research Promotion Agency (FFG). The algorithm is designed to rate the probability of tuberculosis on 2D chest X-ray images and aims to increase throughout when screening UAE immigrants.

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LISAvienna is a joint life science platform operated by austria wirtschaftsservice and the Vienna Business Agency. On behalf of the Austrian Federal Ministry for Digital and Economic Affairs and the City of Vienna, LISAvienna contributes to the advancement of life sciences in Vienna.