Community News

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SCS Swiss Chemical Society

SWISS CHEMICAL SOCIETY NEWS

SCS Annual Report 2020

With pleasure we look back on a very 'interesting and active year. The Swiss Chemical Society not only continued and developed its well-established activities but again pushed new initiatives to face todays challenges. We also implemented new sections and networks to incorporate community members whose interest were not covered so far. In addition, the SCS took over the responsibility for existing programs that now run under the umbrella of the SCS and complete our activity portfolio.

2020 was one of the most difficult and challenging years we have been through at the personal and professional levels and the outbreak of the global Covid-19 pandemic restricted our life in ways we could never have imagined. From March 2020 on meetings with larger groups were prohibited and collaboration was therefore limited to virtual meetings. Many of our events had to be cancelled, postponed or conducted virtually and it seems that this situation will continue at least until next summer.

As a typical network organization, the SCG focuses as much on personal contacts as on the exchange of scientific knowledge, and these contacts had to be reduced to a minimum. Nevertheless, we faced the challenges and remained very active serving our members, developing and broadening the Society's focus to meet the members' expectations and needs in the future. The SCS Executive Board and the Head Office, supported by many of our voluntary members of our network, re-organized many activities and provided them as online events. The numerous feedbacks and the high number of participants in our events showed that our decisions were highly appreciated.

Of course, we all look forward to moving again to face-to-face events which are so much needed to keep us fully involved in science enjoying the SCS community. We can assure you that we will return to normal live as soon as the epidemiological situation will allow it.

After nearly 75 years of publishing activity in one or another form, CHIMIA entered a significant new phase in 2020 by becoming a platinum Open Access journal. All scientific articles are available immediately free of charge. This important step forward was accompanied by a redesign of the cover and an update of the layout of the scientific articles.

In addition to the well-established activities, we focused on the following new initiatives:

- Establish the Section Chemistry and the Environment, incl. CHIMIA issue 3/2020 and a new parallel session at the SCS Fall Meeting on that topic.
- New strategic orientation of SusChem Switzerland and merge the network with the SCS community of Green and Sustainable Chemistry.
- Launch three new networks in the fields of Chemical Ecology, Flow Chemistry and Materials Chemistry and define the mission statements as well as first activities for 2021.
- Develop and promote the two social networks Women in Chemistry and youngSCS, which reinforce and enrich our strong thematic communities.
- Developing the new SCS webpage including the portals for our thematic and social communities as well as a new website template for the efficient handling of our numerous events.

Furthermore, we stayed actively connected to our partners and co-operated for many projects.
Please enjoy reading through the 2020 annual report that shows again a very active and lively society and that is part of this CHIMIA issue as well.

Dr. Alain De Mesmaeker, President
David Spichiger, Executive Director

Invitation to the Virtual SCS General Assembly 2021

The Board of Directors invites all members of the Swiss Chemical Society and the delegates of its associated societies to join the 31st General Assembly. Due to the uncertainty that comes along with the Covid-19 pandemic, we will again organize the assembly as a virtual event via the video conference platform Zoom.

SCS General Assembly 2021
April 15, 2021, 13.15–14.00h (Lunch break of the SCS Spring Meeting 2021)
scg.ch/ga2021

Provisional Agenda

1. Welcome and approval of the agenda
2. Accepting online vote counting
3. Minutes of the 30th General Assembly from June 24, 2020 (published in CHIMIA 7-8/2020, A635)
4. Annual report 2020 (published in CHIMIA 1-2/2021)
5. Financial statement 2020 incl. audit report
6. Discharge the Board
7. Elections:
   Christian Bochet as new President as of 2022
   New Board Members
8. News and strategic projects
9. Outlook 2021/2022
10. Varia

Motions to the assembly can be submitted until March 31, 2021 to *info@scg.ch*. A summary of the financial statement 2020 will be published on the website after the formal audit.

SCS Anniversary Members 2020

The Board members of the Swiss Chemical Society would like to take this opportunity to congratulate our senior members who celebrate an anniversary in 2021. We would like to express our special thanks to Albert Eschenmoser, who joined the SCS in 1950, and to Hansueli Brechbühler, Jack D. Dunitz, Klaus Günter Artz and Toni Rihs who have been SCS members for 60 years.

Member for 70 years
Albert Eschenmoser, Küsnacht

Member for 60 years
Klaus Günter Artz, Basel
Hansueli Brechbühler, Basel
Jack D. Dunitz, Küsnacht
Toni Rihs, Villars-sur-Glâne

Member for 50 years
Peter Baumeister, Flüh
Emil Broger, Zurich
Hans T. Frei, Merlischachen
Jakob Kuhn, Bachs
Peter M. Müller, Therwil
Ueli Widmer, Rheinfelden
Alexander von Zelewsky, Brissago

Member for 40 years
Peter Anker, Delémont
Kaspar F. Burri, Binningen
Silvio Canonica, Au
Fritz Dick, Bern
Eric Francotte, Nuglar
Kurt Hilpert, Hofstetten
Ernst Peter Kündig, Chancy
Ernst Kupfer, Zurich
Peter Maienfisch, Rodersdorf
Hans-Rudolf Marti, Küngoldingen
Peter Skrabal, Kilchberg ZH
Paul Vesel, Reinach
Alan Francis Williams, Genthod
Werner Zambach, Bättwil

Member for 30 years
Rachid Benhamza, Losone
Werner Breitenstein, Basel
Susanna Burckhardt-Herold, Zurich
Gion Calzaferri, Bremgarten
Heinz Frei, Berkeley (US)
Richard Gamma, Riehen
Bernd Giese, Fribourg
Matthias Hamburger, Therwil
Rolf Hilfiker, Allschwil
Véronique Nery, Boussens
Gerhard Penn, Oberwil
Jean-Louis Reymond, Bern
Philippe Schneider, Genève
Urs Stauss, Bern
Gisela Umbricht, Marly

Member for 20 years
Karl-Heinz Altmann, Reinach
Stephan Bachmann, Allschwil
Thomas Bark, Zurich
Rainer Beck, Lausanne
Alain Blanc, Villigen
Thomas Bürgi, Genève
Erick M. Carreira, Zurich
Jürg Daniel, Winterthur
Patrick Dietemann, München
Josef Dommen, Zurich
Stefano Ferrari, Sissach
Gilles Gasser, Villigen PSI
Bernd Graef, Grenzach-Wyhlen
Ulrich Graf, Bottmingen
Detlef Günther, Zurich
Urs Hofmeier, St. Pantaleon
Ulrich Huber, Erlenbach
Roman Imhof, Itingen
Frank Krumeich, Regensdorf
Markus Lerchi, Zurich
Roland Looser, Lausen
Marco Mazzotti, Zurich
Markus Niederberger, Watt
Philippe Panchaud, Allschwil
Eike Reich, Muttenz
Samuel Rentsch, Spiegel b. Bern
Christoph Rickert, Reinach
Roland K.O. Sigel, Zurich
Martin Spormann, Reinach
Daniel Suter, Baden
Christian Tanner, Olten
Emmanuel Varesio, Commugny
Tomasz Adam Wesolowski, Genève
Oliver Zerbe, Zurich
Stefan Zürcher, Zurich

Special Birthday Celebrations in 2021

Several of our senior SCS members will celebrate special birthdays in 2021. This gives us the opportunity to warmly congratulate them and wish them many more years with us!

100th Birthday
Fritz Sulzer, Langenthal

90th Birthday
Peter E. Häfelfinger, Riehen

85th Birthday
Lucie R. Balsenc, Genève
Rolf Meyer, Zufikon
Max Ribi, Allschwil

80th Birthday
Rudolf Altorfer, Bülach
Wilfried Bauer, Laufenburg
Kaspar F. Burri, Binningen
Gion Calzaferri, Bremgarten
Kaspar Eigenmann, Arlesheim
Rudolf Geiger, Bottmingen
Walter Graf, Uetikon am See
Heinz Heimgartner, Zürich
Hans Hollenstein, Zuzwil
Bernard Liebich, Ascona
Roel Prins, SE Alkmaar (NL)
Albert Renken, St. Sulpice

Martin Roth, Hölstein
Carl W. Schläpfer, Düdingen
Peter Skrabal, Kilchberg
Paul Stoll, Riehen

75th Birthday
Heinz Berke, Zürich
Anne Dimitrov-Wagenknecht, Bernex
Rudolf O. Duthaler, Bettingen
Beat Ernst, Magden
Heinz Gäggeler, Brugg
Bernhard Kräutler, Innsbruck (AT)
Ernst Peter Kündig, Chancy
Othmar Leukart, St. Pantaleon
Roger Malherbe, Muttenz
Rudolf Naef, Lupsingen
André Peisker, Mönthal
Rudolf Schmid, Dällikon

70th Birthday
Christof Angst, Zürich
Fritz Dick, Bern
Andreas Dimmler, Winterthur
Eric Francotte, Nuglar
Kurt Hilpert, Hofstetten
Edouard Marc Meyer, Neuchâtel
Veronika Meyer, St. Gallen
Christian Müller, Bern
René Nordmann, Zürich
Silvio Ofner, Münchenstein
Laura Sigg, Effretikon
Hans Peter Wessel, Schliengen (DE)
Alexander T. Zaslona, Genève


Paul Stoll


Heinz Berke


Rudolf O. Duthaler


Beat Ernst


Heinz Gäggeler


Bernhard Kräutler

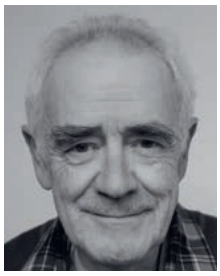

Ernst Peter Kündig


Othmar Leukart


Rudolf Naef


Lucie R. Balsenc


Max Ribi


Kaspar F. Burri


André Peisker


Christof Angst


Fritz Dick

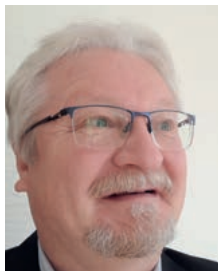

Gion Calzaferri


Kaspar Eigenmann

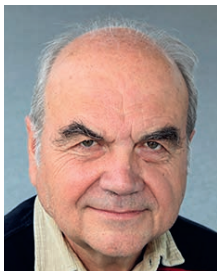

Rudolf Geiger


Veronika Meyer


René Nordmann


Hans Peter Wessel


Heinz Heimgartner


Albert Renken


Martin Roth


Alexander Zaslona

Chemistry Travel Award 2021

Special Edition:
Conference or Lab visit!

Due to the recent pandemic, many conferences have been cancelled, postponed or switched to an online event. The board of the Platform Chemistry of the SCNAT and the Swiss Chemical Society discussed together to offer the PhD students another option for the year 2021. Instead of having only the classic awards to go to an international conference, we will also offer the possibility to apply for a lab visit.

Option 1: Contribution of CHF 1000 towards the cost of an active participation at an international conference.

Option 2: Contribution up to CHF 1000 to visit a Foreign Lab for research. This option is new and only available for the year 2021.

The deadline is March 31st, 2021.

Source: *chemistry.scnat.ch/travel_award*

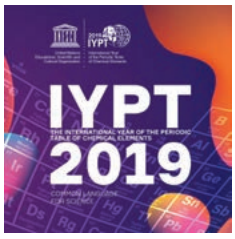
Launch of the new SCS Website

We are proud that we could go online with our new SCS website in middle of January 2021. The aim of the project was to provide a modern website with clearly structured content that also fulfills the today's safety standards. The site reflects the four business areas in which SCS is active: Events, Networks, Awards and Publishing

Notable the direct access buttons on the home site provide an easy access to all relevant contents. The portals of our thematic and social communities reflects the activities of the divisions, sections and networks and bundles the information per target groups. We not only provided information about current and future initiatives but we have also prepared the SCS history in archives.

Source: *scg.ch*

Celebrate the Periodic Table again with the IYPT19 Final report



The Final Report of the International Year of the Periodic Table of Chemical Elements 2019 (IYPT) was released in October 2020 and is now available online (pdf). The report gathers the planning and the initiatives organised throughout the year-long celebration #IYPT19, including also the ones by EuChemS and its Member Societies, who coordinated hundreds of activities and events in 2019, and these actions have reached millions of people through media coverage.

If you wish to discover more about the content of the report related to EuChemS activities, we invite you to read the article on the EuChemS website.

Source: *euchems.eu/iypt19-final-report-is-now-available*

Swissethics Publishes Recommendations on Research Adapted to Gender

Gender equity in research is an important issue: there are significant differences between men and women in many clinical drug trials, as well as in non-clinical trials with persons or in research projects of further use of health-related personal data and biological material.

The published recommendations address essential steps towards equitable research between the sexes, with ethics commissions playing an important role in the evaluation of the applications.

Source: *swissethics.ch*

A Warm Welcome to Our New Members!

Period: 18.11.2020–25.01.2021

Remo Arnold, Egolzwil – Luca Artiglia, Villigen – Yan Berset, Romont – Patricia Brandl, Lausanne – Jan Bühler, Hagendorn – Chiara Compagnoni, Zurich – Klaus Eyer, Zurich – Leslie Anne Fendt, Wollerau – Gaetano Geraci, Fribourg – Ilias Koutsopetras, Strasbourg (FR) – Gordana Kovacevic, Basel – Karl Heinz Krawinkler, Basel – Camiel Kroonen, Basel – Adhil Kabeer Kurukkan, Zurich – Magdalena Lederbauer, Zurich – Chung Sum Leung, Zurich – I-Hsuan Lin, Zurich – Gudlaugur Ludvíksson, Zurich – Mario Marcia, Birmens – torf – Thierry Paschoud, Les Diablerets – Lauriane Pillet, Bern – Cristina Pizzolitto, Como (IT) – Maria Reichenbach, Zurich – Hannah Rosenbach, Zurich – Johanna Schröder, Bern – Rishi Shivhare, Bern – Andrii Suponytskyi, Dietikon – John Warner, Wilmington, MA (US) – Cedric Wüthrich, Bülach.

SCS AWARD WINNERS 2021

It's our pleasure to announce the winners of the 2021 SCS Awards. We would like to sincerely congratulate all winners for their outstanding scientific contributions, and we are looking forward to the award ceremonies and lectures that will take place at one of our upcoming SCS events.

Werner Prize 2021

Prof. Raffaella Buonsanti,
EPFL Lausanne,
awarded for her original and significant contributions in the chemistry development of tailored nanomaterials and their applications in catalysis, especially CO_2 electroreduction.
The award lecture takes place at the SCS Fall Meeting 2021 on September 10.

Sandmeyer Award 2021

Casale SA and Clariant, namely ***Dr. Pierdomenico Biasi, Mr. John D› Alessandri, Mr. Ermanno Fillippi Mr. Sergio Panza***, Casale SA and ***Dr. Rene Eckert, Dr. Marvin Estenfelder, Dr. Stephan Reitmeier, Dr. Andreas Reitzmann,*** Clariant AG awarded for their achievements obtained in the field of catalysis and reaction engineering, especially for the development and implementation of the AmoMax®-Casale, a new catalyst for a greener and less energy consuming process for industrial large scale ammonia synthesis.
The award lectures take place at the SCS Fall Meeting on September 10, 2021 and at the Freiburger Symposium on April 23, 2021.

SCS Senior Industrial Science Award 2021

Dr. Andrew Edmunds,
Syngenta Crop Protection AG,
awarded for his impressive track record of achievements in the field of chemistry and crop protection reflected in 140 patents, 28 publications and more than 20 lectures at universities and international conferences.
The award lecture takes place at the SCS Fall Meeting 2021 on September 10.

SCS Industrial Science Award 2021

Dr. Cornelia Zumbrunn,
Idorsia Pharmaceuticals Ltd,
awarded for her key contributions as a medicinal chemistry project leader in the challenging field of antibiotic drug discovery, including her contributions to several anti-bacterial research projects and the development of a significant number of chemical series into advanced compounds, some of which were ultimately selected as preclinical development candidates.
The award lecture takes place at the SCS Fall Meeting 2021 on September 10.

SCS Green & Sustainable Chemistry Award 2021

Prof. Francesca Paradisi,
University of Bern,
awarded for her ground-breaking work in developing eco-friendly and ultra-efficient biotransformations for the synthesis of high-value chemicals, dramatically increasing the applicability of biocatalysis.
The award lecture takes place at the 2nd Swiss Green & Sustainable Chemistry Day on September 22, 2021.

METAS Award 2021

Dr. Kristýna Kantnerová,
EMPA Dübendorf,
awarded for her excellent and timely work in the field of metrology of clumped isotopes of nitrous oxides.
The award lecture takes place at the *CH*analysis on May 6-7, 2021.

Simon-Widmer Award 2021

Prof. Andrew deMello,
ETH Zurich
awarded for his great contributions to the field of bioanalytical science and microfluidic technology.
The award lecture takes place at the *CH*analysis on May 7-8, 2021

Dr. Max Lüthi Award 2021

Mr. Stefan Näf,
ZHAW Wädenswil
ausgezeichnet für seine herausragende Bachelorarbeit „Chirale Selektoren für die Enantiomerentrennung kleiner chiraler Moleküle“.

and to

Ms. Kristina Djordjevic,
FHNW Muttenz,
ausgezeichnet für ihre herausragende Bachelorarbeit „Generische SST`s im Kontext von HDX-MS Applikationen“.

Grammaticakis-Neumann Award 2021: The SCS postponed the 2021 Grammaticakis-Neumann Award to 2022.
Balmer Prize 2021: No Prize is awarded in 2021. The next Prize will be in 2022.
Nomination deadline for the 2022 Awards is September 30, 2021.
scg.ch/awards

HONORS, AWARDS, APPOINTMENTS

The 2020 Materials Today Innovation Award to Prof. Michael Grätzel, EPFL

Materials Today will present the 2020 Materials Today Innovation Award to ***Prof. Michael Graetzel, EPFL Lausanne,*** for his ground-breaking work on solar energy conversion.

The Materials Today Innovation Award recognizes “monumental” work, which has opened a new, significant field of research and resulted in impactful, practical applications. Previous winners include Nobel Laureate Prof. M. Stanley Whittingham (Binghamton University) and Prof. Russell Dupuis (Georgia Tech) for their work on Li-ion batteries and MO-CVD respectively.

The virtual presentation took place on Thursday 10th December 2020. Live sessions featured a plenary presentation from Prof. Grätzel, as well as invited presentations from the winners of the 2020 Materials Today Rising Star Awards in the fields of Quantum Materials, Energy Conversion, Energy Storage, Biomaterials.
Source: *actu.epfl.ch/news*

Prof. Thomas Ward, University of Basel, awarded the 2021 ACS Catalysis Lectureship

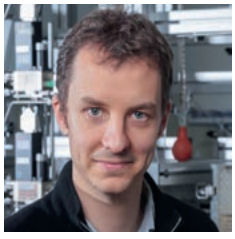
Prof. Thomas Ward of the University of Basel and director of NCCR Molecular Systems Engineering receives the 2021 *ACS Catalysis* Lectureship for the Advancement of Catalytic Science for his development of artificial metalloenzymes for biocatalysis and synthetic biology.

The *ACS Catalysis* Lectureship for the Advancement of Catalytic Science annually recognizes ground-breaking research in catalysis by an individual or team over the past seven years that have strengthened the connections between catalysis disciplines and had a profound effect on catalysis as a whole.

Thomas Ward pioneered the development of artificial metalloenzymes (ArMs) for organic synthesis by merging organometallic catalysis with enzymatic catalysis. Over the years, Thomas Ward created and evolved ArMs for fourteen different water-compatible transformations. More recently, and funded by an ERC advanced grant, Thomas Ward has introduced ArMs in living cells. This has the potential to greatly expand applications of ArMs for biocatalysis and synthetic biology. The cross-disciplinary approach of his research truly exemplifies the blurring of boundaries across fields ranging from chemistry to biology to engineer ArMs for organic synthesis both *in vitro* and *in vivo.*

The *ACS Catalysis* Lectureship is co-sponsored by the ACS Division of Catalysis Science and Technology and *ACS Catalysis.* It will be presented at a special session of the ACS Division of Catalysis Science and Technology at the 262nd ACS National Meeting, which will take place in Atlanta, Georgia, August 22–26, 2021.

Prof. Jeremy Luterbacher, EPFL, wins ACS Lectureship Award



Prof. Jeremy Luterbacher has been awarded one of the 2021 Sustainable Chemistry & Engineering Lectureship Awards from the American Chemical Society (ACS).

The ACS Sustainable Chemistry & Engineering Lectureship Awards "recognize the research contributions of scientists working in green chemistry, green engineering, and sustainability in the chemical enterprise,". The winners are selected each year from three regions: The Americas, Europe/Middle East/Africa, and Asia/Pacific.

Representing Europe/Middle East/Africa, Professor Jeremy Luterbacher, head of EPFL's Laboratory of Sustainable and Catalytic Processing at EPFL's School of Basic Sciences, has won one of the three 2021 Awards. Luterbacher is being honored "for the development of tailored catalysts to upgrade lignin and the application of unique functionalization chemistry during biomass depolymerization."
Source: *actu.epfl.ch/news*

Prof. Paul Dyson, EPFL, elected AAAS Fellow

Prof. Paul Dyson at EPFL's School of Basic Sciences has been elected Fellow of the American Association for the Advancement of Science.

The American Association for the Advancement of Science (AAAS) is "the world's largest multidisciplinary scientific society". This year, the AAAS has honored some of its members with the lifetime title of elected Fellow to recognize their "important contributions to STEM disciplines, including pioneering research, leadership within a given field, teaching and mentoring, fostering collaborations, and advancing public understanding of science."

One of the new AAAS Fellows in the Section of Chemistry, is Professor Paul J. Dyson from EPFL's Institute of Chemical Sciences and Engineering (ISIC). Professor Dyson's research includes the design and study of new organometallic drugs, the design of catalysts and the study of their mechanisms, and the design, properties and applications of ionic liquids.

The newly elected AAAS Fellows will be honored at a virtual induction ceremony on February 13th, 2021, just after the AAAS Annual Meeting. The honorees will receive official certificates and rosette pins in gold and blue, colors that symbolize science and engineering respectively.
Source: *actu.epfl.ch/news*

Prof. Paul Dyson is the new Dean of the School of Basic Sciences at EPFL Lausanne

Prof. Paul Dyson has been appointed as the new Dean of the School of Basic Sciences from 1 January 2021.

Paul Dyson joined the Institute of Chemical Sciences and Engineering at EPFL in 2002 as the head of the Laboratory of Organometallic and Medicinal Chemistry, and he chaired the Institute between 2008 and 2016.

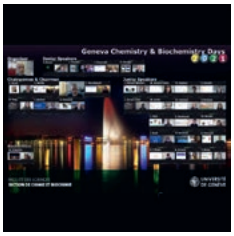
His research topics include the design and study of new organometallic drugs, the design of catalysts and the study of their mechanisms, and the design, properties and applications of ionic liquids.
Source: *actu.epfl.ch/news*

ABB Research Prize goes to Guido Zichittella, ETHZ

Dr. Guido Zichittella, ETH Zurich, is honored for his doctoral thesis in the group of Javier Pérez-Ramírez (ICB). The prize is awarded annually to students, undergraduates and doctoral candidates for outstanding work in the fields of power engineering and information and automation technology.

Guido Zichittella receives the prize, which is endowed with CHF 10 000, for his doctoral thesis on "Alkane Activation by Catalytic Oxyhalogenation"
Source: *chab.ethz.ch/en/news-and-events*

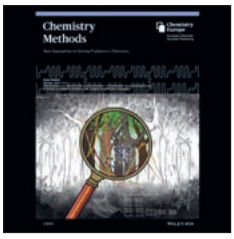
Winners of the Best Presentation Award at the Geneva Chemistry & Biochemistry Days 2021



Despite its distant format as an online conference, the 11th edition of the Geneva Chemistry & Biochemistry Days, 14 to 15 January 2021, has been a great success, with a permanent number of Zoom connexions between 150 and 170!
The School of Chemistry and Biochemistry warmly acknowledge the Senior Speakers for the sharing of their front-edge research, as well as the Junior Speakers for the ever-increasing quality of their presentations. Congratulations to Rémi Patouret, Pitchnaree Kraikaew and Rémi Martinent for their award-winning talks!
The SCS awards a 2-years free membership to the winner and a one-year free membership to the two runner-ups:
1st Prize: ***Rémi Patouret*** (team of Prof. Nicolas Winssinger, Department of Organic Chemistry);
Total synthesis of goyazensolide and identification of the first importin-5 inhibitor
Follow-up Prize: ***Pitchnaree Kraikaew*** (team of Prof. Eric Bakker, Department of Inorganic and Analytical Chemistry);
Ultra-sensitive pH measurements with a coulometric principle
Follow-up Prize: ***Rémi Martinet*** (team of Prof. Stefan Matile, Department of Organic Chemistry);
Oligomers of cyclic oligochalcogenides for enhanced cellular uptake.
Source: *scg.ch*

JOURNAL NEWS

Chemistry-Methods published its first Issue in January 2021



Chemistry Europe implemented its latest journal in January 2021 and published the first issue of Chemistry-Methods: a journal dedicated to solving problems in all areas of chemistry.

Founded in 1995, Chemistry Europe is an association of 16 chemical societies from 15 European countries, representing over 75,000 chemists. It publishes a family of high-quality scholarly chemistry journals, covering a very broad range of disciplines.
Source: *chemistry-europe.onlinelibrary.wiley.com*

Helvetica, Volume 104, Issue 1, January 2021

Reviews
In Quest of Environmentally Stable Perovskite Solar Cells: A Perspective
Ioannis Spanopoulos, Weijun Ke, Mercouri G. Kanatzidis

Essays
Having Fun (and Commercial Success) with Josiphos and Related Chiral Ferrocene Based Ligands.
Hans Ulrich Blaser, Benoît Pugin, Felix Spindler

Communications
Asymmetric Synthesis of Perfluoroalkylated α-Amino Acids through Generated Radicals Using a Chiral Ni(II) Complex
Nadezhda V. Stoletova, Andrey D. Moshchenkov, Alexander F. Smol'yakov, Zalina T. Gugkaeva, Victor I. Maleev, Dmitry Katayev, Vladimir A. Larionov

Full Papers
Instability of PVDF Binder in the $LiFePO_4$ *versus* $Li_4Ti_5O_{12}$ Li-Ion Battery Cell
Daniela Leanza. C. A. F. Vaz. Petr Novák. Mario El Kazzi

Expanding the 0D $Rb_7M_3X_{16}$ (M=Sb, Bi; X=Br, I) Family: Dual-Band Luminescence in $Rb_7Sb_3Br_{16}$
Kyle M. McCall, Bogdan M. Benin, Michael Wörle, Thomas Vonderach, Detlef Günther, Maksym V. Kovalenko

Transition-Metal Free Catalytic Synthesis of Trifluoromethyl Indolines by [4+1] Cycloaddition of Trifluoromethyl Benzoxazinones with Sulfur Ylides
Koki Kawai, Hiroto Uno, Daichi Fujimoto, Norio Shibata

onlinelibrary.wiley.com/journal/15222675/

INDUSTRIAL NEWS

Source: *www.chemanager-online.com*

Lead Pharma and Roche Link on Immune-mediated Diseases

November 23, 2020: Dutch clinical-stage drug firm Lead Pharma has entered into a collaboration and license agreement with Swiss pharma giant Roche to develop oral small molecules for a broad range of immune-mediated diseases. The two companies will partner on research activities up to the selection of a pre-clinical candidate, after which Roche will take responsibility for further development and global commercialization. Under the terms of the deal, Lead Pharma will receive an upfront payment of €10 million and will also be eligible to receive research funding and pre-clinical milestone payments. Total potential payments could add up to €260 million, plus royalties on worldwide sales. "This is the second project we partner with one of the largest pharmaceutical companies under our Discover, Design and Deliver platform," said Lead Pharma's chief scientific officer, Arthur Oubrie. "Our rigorous target selection process, translational screening cascade, and smart medicinal chemistry have been essential to bring this project to this stage. We are keen to collaborate with our colleagues at Roche to bring this novel approach to patients." There are hundreds of immune-mediated disorders, including joint diseases such as rheumatoid arthritis, skin diseases such as psoriasis and atopic dermatitis, and inflammatory bowel diseases. Symptoms range from mild skin rashes to severe organ failure and death. Lead Pharma, a spinoff from the Hubrecht Institute and the University Medical Center Utrecht, is also collaborating with French pharma Sanofi under an agreement signed in February 2015. Under this collaboration, the companies are aiming to discover, develop and commercialize small molecules directed against the nuclear hormone receptor ROR gamma (t) for treating various autoimmune disorders, including psoriasis, rheumatoid arthritis and inflammatory bowel disease.

Clariant to Restructure and Cut Jobs

November 30, 2020: After downsizing operations through divestments over the past year, Swiss specialty chemicals pro-

ducer Clariant now plans to restructure its corporate organization to reflect the present leaner status and shift the emphasis of its portfolio to higher value-added products. To help steer the plans financially, the group will take a charge of 70 million Swiss francs against discontinued operations in its reporting on the current fourth quarter. It also has announced plans to shed around 1,000 jobs in certain regions and services. Roughly a third of the staff reductions will be due to divestment transfers, and natural fluctuation will also help to trim the total. Under an efficiency scheme launched earlier, Clariant said it planned to cut staff by 600 up to the end of 2021 and achieve 50 million Swiss francs in cost-base savings on its continuing businesses Commenting on the latest decision, Hariolf Kottmann, executive chairman and interim CEO, pointed to the need to strengthen the specialty chemical producer's core businesses. By avoiding remnant cost and reducing complexity while at the same time focusing on innovation, sustainability and operational excellence, he said Clariant will be in a better position to deliver above-market growth, higher profitability and stronger cash generation. The "right-sizing," as management calls the restructuring, follows the divestment of the healthcare packaging business to private equity investor Arsenal Capital Partners for 308 million Swiss francs, in a deal that closed in the 2020 third quarter. It also sold its market-leading masterbatch unit for $1.44 billion to Avient (formerly known as PolyOne). Clariant also has recently sold parts of its 3D printing business to Dutch chemical producer DSM as well as an electronic materials unit to imaging specialist Agfa. The group has now confirmed that it will relaunch plans to divest its pigments unit. It put the transaction on ice last spring due to concerns about obtaining a suitable price at the height of the coronavirus pandemic. In the immediate future, at least, Clariant's business activity will rest on three segments that had sales close to 3 billion Swiss francs in the first nine months of 2020. Care Chemicals consists of lubricants, food additives, coolants and detergents, the Catalysis segment manufactures catalysts and Natural Resources produces specialty oilfield, mining and manufacturing chemicals. Analysts are now speculating on whether and where the Swiss group plans to make acquisitions in future to add substance to its remaining core activity. After a peak of around 6 billion Swiss francs in 2015, annual revenue fell to around 4 billion francs in 2019. The specialties player, originally pieced together from assets shed by the former Ciba-Geigy, Sandoz and Hoechst, has been struggling after a planned merger with Huntsman of the US was thwarted by US activist investor White Tale, and the cooperation in plastics with Saudi Arabia's SABIC floundered after that company's takeover by compatriot Saudi Aramco.

Sabic weighing ipo for engineering plastics?

Separately, citing "people with knowledge of the matter," news agency Bloomberg reported last week that SABIC is considering an initial public offering of its engineering plastics business acquired from GE in 2007.

DSM and Neste Link on Renewable Feedstocks

December 1, 2020: DSM has entered into a strategic partnership with Neste that will allow the Dutch health, nutrition and materials company to cut its carbon footprint and support the industry's transition to a circular economy. Under the new collaboration, DSM Engineering Materials will start replacing a significant portion of the fossil feedstock used to make its high-performance polymers – amounting to several thousand tons in the short term – with that produced from recycled waste plastics and/or 100% bio-based hydrocarbons. The polymers are used in industries that include automotive, electronics and packaging. Neste's bio-based hydrocarbons are derived entirely from renewable sources such as waste and residue oils and fats. With regard to waste plastics, the Finnish company focuses on those that cannot be mechanically recycled and have previously been sent to incineration and landfill. Because Neste's bio-based raw materials are a drop-in replacement for commonly used fossil feedstocks, they can be used in existing polymers production processes. DSM added that all of the chemically recycled and bio-based materials will be verified under the International Sustainability and Carbon Certification (ISCC) Plus scheme and will not require re-qualification. ISCC is a globally recognized system that covers all sustainable feedstocks, including agricultural and forestry biomass, circular and bio-based materials and renewables. Shruti Singhal, president of DSM Engineering Materials, said the company intends to further reduce its footprint and "will offer a full alternative range of our existing portfolio based on bio- and/or recycled-based materials by 2030."as also introduced an entire range of additives based on Neste RE.

Launch of Neste RE

In separate news, Neste has launched Neste RE, a 100% renewable and recycled raw material for producing chemicals and plastics. The company said the raw material can be used in a wide range of plastics applications, from sports gear to toys, and even in sensitive applications such as high-performing medical equipment. "This new product provides a new solution for the industry to close the circle of material flows. Neste RE is available globally, and together with like-minded partners, we can use Neste RE as a tool to change and revolutionize plastics," said Lars Börger, Neste's vice president of renewable polymers & chemicals. Other companies collaborating with Neste include LyondellBasell, Borealis and Clariant. Neste said LyondellBasell produced the world's first commercial-scale volumes of renewable, bio-based PP in 2019. In addition, and said to be the first time ever, Borealis produced renewable PP from Neste's renewable propane at its propane dehydrogenation plant in Kallo, Belgium, in March 2020. Swiss specialty chemicals company Clariant has also introduced an entire range of additives based on Neste RE.

Expanding Into Oligonucleotides

December 4, 2020: The global market for oligonucleotide therapeutics is expanding rapidly. Bachem, an innovation-driven company based in Bubendorf, Switzerland, has entered this competitive environment in 2019. Specializing in the development and manufacturing of peptides and oligonucleotides, the group sees itself as a partner of choice for the biotech and pharma industry worldwide, and the decision to enter the field of oligonucleotide manufacturing was well-prepared and ultimately taken in line with the company's long-term growth plan. Torsten Woehr, head of Oligonucleotides at Bachem, explains the company's strategy in the field of oligonucleotide manufacturing.

CHEManager: Mr. Woehr, what is Bachem's strategy in entering the market for oligonucleotide therapeutics?

Torsten Woehr: We are operative since 2019 and are gradually expanding our expert resource pool, capabilities and capacity for oligonucleotides. Despite having set ambitious goals we go step by step. Having said that, we are more and more shifting our focus from closing the oligo-specific technology gap to building a solid foundation for future growth. Our large-scale facility, in fact, will come online in 2021. We took the time to thoughtfully design an equipment train featuring some innovative engineering solutions for increased utilization flexibility and improved process control.

Then, later on our way to become a first-choice manufacturer for oligonucleotides, we hope to make our own contributions to advancing the drug class by making oligonucleotide API production more scalable and cost-effective.

The CMO environment, in particular for oligonucleotides, is developing quickly. How do you see your chances and what are major hurdles?

T. Woehr: The progress in oligonucleotide-based drug development directly translates into a growing number of granted marketing authorizations. We actually might be seeing additional approvals before the end of the year. In addition, there is strong interest in the therapeutic application of antisense technology and non-coding RNA biology, which is reflected in an ever growing number of clinical programs in operation and in a global project portfolio that is spreading across a broader range of indications.

We therefore anticipate the demand for oligonucleotide custom manufacturing services to remain strong in the foreseeable future. As for challenges: mastering oligonucleotide chemistry is not trivial, and building a track record of successfully completed scale-up projects is another major hurdle for every CMO entering the market.

In addition, building large-scale manufacturing facilities for oligonucleotides, meaning facilities with an output of 1-Mol per batch or even more, is very expensive. At Bachem a sizeable CAPEX budget has been granted to purchase special equipment and to build the necessary infrastructure. Finally, almost the entire equipment train is custom-built. It is important to get the design details right, ideally on the first pass.

What are the major technical challenges for the production of oligonucleotide therapeutics? Where can Bachem benefit from their expertise in peptide synthesis?

T. Woehr: Similar to peptides, the manufacture of oligonucleotides requires expert knowledge in solid-phase synthesis and protecting group chemistry. Downstream processing typically includes purification by chromatography and isolation by ultra/diafiltration techniques, precipitation and finally lyophilization. The manufacture of peptide APIs follows the same basic principle. And it is the core technology Bachem has developed over decades. Still, there are important differences between peptides and oligonucleotides. The synthesis in flow-through columns consumes large volumes of solvents and reagents for which our facility infrastructure will be appropriately expanded. Furthermore, oligonucleotides are negatively charged and highly water soluble, requiring the handling of aqueous solutions throughout the entire downstream process. And let's not forget that oligonucleotide APIs, especially double-stranded entities, are considerably larger than peptides and pose challenges also from an analytical point of view. Overall, it is fair to say that our peptide manufacturing background and our analytical capabilities are certainly very helpful in our quest to build a successful oligonucleotide business.

Covid-19 exposes the weak links in the pharma supply chain. How has the Coronavirus affected Bachem and your oligonucleotide development plans?

T. Woehr: Indeed, these are challenging times. Covid-19 affects all of us on a personal level, in our daily work life and social interactions. Early on in the pandemic Bachem has received essential business status from the Swiss authorities, and our commitment is to our partners and patients, who depend on Bachem's products and an uninterrupted drug supply. Bachem's corona task force monitors the Covid-19 pandemic closely and implements appropriate measures in a pro-active way. In addition, employees are repeatedly trained in preventing infections and reminded not to become complacent in the process. So far the virus has not impacted Bachem's ability to produce, and so is our oligonucleotide program still on track. Fingers crossed we continue navigating this situation successfully and can make a contribution in battling Covid-19.

Lonza Adds Bioconjugation Suites at Visp

December 8, 2020: Swiss CDMO Lonza will build two new suites for the commercialization of antibody-drug conjugates (ADCs) at its Visp site following the signing of a long-term collaboration with a global biopharma company. As part of its Ibex Dedicate model, Lonza will add facilities totaling 1,500 m2 of active manufacturing space, which will offer quality control labs, logistics and other central services that the CDMO said will allow for faster ramp-up times, assured delivery and high performance. The high through-put suites will be able to handle highly potent materials for cancer therapies, initially manufacturing two treatments. The dedicated facility is expected to start operations from the end of 2022, employing about 200 staff. "Bioconjugates represent an exciting class of molecules that are proving their worth and making a real difference to patients suffering from diseases such as cancer," said Lonza CEO Pierre Alain Ruffieux. "From a manufacturing point of view, antibody-drug conjugates are challenging to produce, and we will be ensuring that our partner can de-risk supply and scale-up rapidly at this crucial moment of commercialization." Last month, Lonza announced it had also inaugurated the first of two planned state-of-the-art, highly-potent API (HPAPI) suites for ADC drug-linker (payload) manufacturing at Visp. The first suite went into operation in March and the second is due to become available early in 2021.

US Merck Divests Moderna Holding

December 9, 2020: US pharma giant Merck has divested its direct holding in Moderna just as the US biotech is on the cusp of receiving an emergency use authorization (EUA) for its mRNA-based Covid-19. It said it expects to "record a small fourth-quarter gain." Without divulging how much it earned on the transaction, Merck said it achieved a "substantial" gain on its direct holding over the life of the investment, particularly in 2020, given the "substantial appreciation" in Moderna's stock price. It said it will retain exposure to the vaccine maker indirectly through its investment in venture funds. Moderna went public in December 2018 at a price of $23 per share. At the beginning of December 2020 the price was $142. The advisory committee of the US Food and Drug Administration (FDA) is scheduled to review the company's EUA application on Dec. 17. The New Jersey-based drugmaker made its first direct investment in the fledgling biotech in 2015, worth $100 million in cash and stock. It added a further $125 million in 2018, reflecting an expanded research collaboration. Merck and Moderna plan to continue to collaborate on the development of personalized cancer vaccines as well as an mRNA-5671 cancer vaccine that encodes the four most common KRAS mutations. This vaccine is currently in Phase 1 trials, both as a solo treatment and in combination with Merck's immuno-oncology blockbuster Keytruda. The drugs giant is participating in Covid-19 vaccine development in another indirect way. In July, it acquired privately held Swiss biotech Themis and gained access to a potential vaccine developed by Themis and its partner, Institut Pasteur. This candidate, V591, uses a measles virus vaccine vector to deliver antigens that spark an immune response to the new coronavirus. Merck is also working on another Covid candidate, V590, based on a recombinant vesicular stomatitis virus platform.

Conrad Keijzer Named new Clariant CEO

December 10, 2020: The board of directors at Swiss specialty chemicals producer Clariant has tapped Conrad Keijzer to be the company's new CEO. The 52-year-old Dutch citizen will take up the job on Jan. 1, 2021, and interim CEO Harriolf Kottmann will again focus on his duties as chairman of the board. Kottmann, who was CEO from 2008 to 2018 and

thereafter chaired the board, moved back into the CEO slot, taking on a double responsibility following the unexpected resignation of Ernesto Occhiello. The latter, who led Clariant for less than a year, returned to his former employer, Saudi Arabia's major shareholder SABIC, after the two companies scuttled plans to create a high-performance materials business group. As CEO, German national Kottmann, who came from SGL Carbon and previously held management positions at Celanese and the former Hoechst, steered Clariant through the choppy waters ruffled up by the potential takeover by an activist investor, the failed merger with Huntsman of the US and SABIC's subsequent purchase of a 25% shareholding in the Swiss company. Conrad Keijzer also has a long history in the European chemicals sector, including 24 years at global paints and coatings manufacturer AkzoNobel, where he was a member of the executive board and CEO of Performance Coatings. Most recently, he was CEO at French minerals group Imerys. Announcing the culmination of a two-year in-depth search for a new CEO, Kottmann described Keijzer is "an excellent choice to guide Clariant into a successful future," while the CEO-designate said he looks forward to leading the company into the next phase of its "important transformation into a high-value specialty chemicals company." Keijzer will have his work cut out for him over the next two years. At the end of November, Clariant announced plans to realign its corporate structure to fit a smaller frame following several major divestments. In the process, the company plans to shed some 1,000 jobs in services and regional structures. The new CEO will also oversee the sale of Clariant's €189 million pigments activities. The sale plans had been put on ice earlier this year due to the coronavirus and concerns over diminished proceeds in the midst of the pandemic, but management recently confirmed plans to restart the process.

Merck KGaA Broadens US Life Science Footprint

December 18, 2020: German pharmaceuticals, chemicals and life sciences group Merck is broadening its manufacturing footprint in the US, splitting a planned €40 million capital investment between its production facilities in Danvers, Massachusetts, and Jaffrey, New Hampshire. Capacity expansions at the two sites that manufacture critical products for customers developing lifesaving therapies including Covid-19 vaccines, as well as providing products and services for biopharmaceutical manufacturing, will significantly increase output by the end of 2021 and during 2022, Merck said. The investments will also create nearly 700 new jobs. The Darmstadt-based group said the US capacity buildup will complement its Life Science arm's other new projects announced earlier this year, further enhancing capabilities and capacity in Switzerland and at its German headquarters, as well as in the US states of California and Wisconsin. Altogether, the business segment has announced capital investments worth more than €350 million for 2020. The €21 million expansion at Danvers will add 6,000 m2 of space to the existing 11,000 m2 single-use assembly operation. It will also provide the capacity needed to support the manufacturing of products across several portfolios, including Merck's Mobius single-use consumables. At Jaffrey, the €18.5 million upgrade planned up to 2022 will add 2,300 m2 to the existing 24,000 m2 facility and include new production lines and equipment to support the manufacturing of filtration devices and membrane products, specifically Durapore-brand filters, Expressfilters and the Viresolve line. The products are used to ensure the sterility of many lifesaving therapies and remove viral contamination for a variety of therapies. "The global coronavirus pandemic has significantly increased demand for our single-use and virus filtration technologies, which we are supplying to more than 50 different companies working on Covid-19 vaccine candidates," said Chris Ross, interim head, Life Science, at Merck.

FDA Issues EUA for Moderna's Covid Vaccine

December 20, 2020: The US Food and Drug Administration (FDA) granted an Emergency Use Authorization (EUA) for US biotech Moderna's mRNA-based Covid-19 vaccine on Dec.18, a day after the agency's advisory panel voted 20-0 to recommend it. In its review, the panel confirmed Moderna's earlier assessment that its vaccine had an overall efficacy rate of 94.1%. Side effects — including fever, headache and fatigue — were common, but the experts said they had identified no specific safety concerns. The US-developed vaccine was found to be only 86% effective in people over 65, lower than the almost 94% reported by Pfizer-BioNTech. Although the experts said the benefits of the vaccine outweigh the risks for people 18 and older – just as for the Pfizer-BioNTech candidate, which is also mRNA-based – they also warned of the possibility of a partial facial paralysis called Bell's Palsy that had cropped up during trials. The FDA is investigating the incidence of the condition, which it said was not necessarily related to the vaccine. The analysis did not find serious allergic reactions to the Moderna vaccine based on trial data. Although such reactions were also not seen in the Pfizer-BioNTech trials, two health care workers in the UK with a history of serious allergies developed severe anaphylaxis. A healthcare worker in the US state of Alaska with no previous history of allergies reportedly suffered flushing and shortness of breath 10 minutes after receiving the German-American vaccine. Questions that came up during the FDA panel's review of Moderna's candidate concerned what would happen to the company's ongoing Phase 3 clinical trial with 30,000 patients if the vaccine was already being administered to others. Some of the panelists argued that it would be unethical to continue giving the placebo. The US Centers for Disease Control and Prevention (CDC) meanwhile has given the green light to immediately begin vaccinating people aged 18 and older with the Moderna vaccine. The CDC said earlier that people with serious allergies could be safely vaccinated if closely monitored for 30 minutes afterward. Following criticism of the age bracket 16 and up agreed for the Pfizer-BioNTech shot, the CDC raised the lower age bracket to 18. Despite unexplained delivery delays for the Pfizer-BioNTech vaccine, "we still anticipate that every American will have the opportunity to be vaccinated by June," Brett Giroir, assistant secretary for health at the US government's Department for Health and Human Services (HHS), said last week. Large groups of Americans nevertheless remain hesitant about receiving the shot, with the Black population said to account for around a third of the skeptics. The US government has purchased altogether 300 million doses of the Moderna candidate, enough to vaccinate 150 million people under a two-dose regime. It also has an option on 200 million more. The vaccine is being provided free of charge, as it received substantial federal development aid. In spite of the emergency approval of a second vaccine, a study model published by the University of Washington on Dec. 18 projected that 562,000 people in the US will have died from Covid-19 by Apr. 1, substantially more than the 502,000 deaths forecast a week earlier.

Supply deals with countries worldwide

Beyond the US, Moderna has also sealed supply agreements with a number of other countries or blocs. The EU has signed up for 160 million doses, Japan for 50 million and Canada for 40 million, with an option for an additional 16 million. Switzerland has agreed to buy 7.5 million doses, the UK 7 million and Israel 6 million. The US vaccine maker plans to begin deliveries to Europe in early 2021, providing the European Medicines Agency (EMA) grants authorization. A meeting to review effi-

cacy and safety data has been moved up from Dec. 29 to Dec. 21. Unofficial reports published during the negotiations put the negotiated price for the Pfizer-BioNTech vaccine at €12 per dose and the price for Moderna's at $18 per dose.

Thermo Fisher Scientific Invests in Germany and US

December 22, 2020: To support worldwide development of Covid-19 drugs and vaccines, CDMO Thermo Fisher Scientific is investing in new facilities for its cell and gene therapy portfolio in both the US and Europe. On Dec. 15, the US firm based in New Jersey announced plans for a new cryocenter in Germany to provide cold chain support for clinical trials. A day later, it said it would build a new plasmid DNA manufacturing facility at its Carlsbad, California, USA, to keep pace with demand in a market where demand has outstripped supply. The new 890 m2 cryocenter at Weil am Rhein, in southern Germany near the European pharma hub of Basel, Switzerland, where Thermo Fisher Scientific has existing clinical services, will specialize in ultra-low-temperature, cryogenic storage and cold chain expertise. Among other things, this will be needed for the Pfizer-BioNTech Covid vaccine that must be kept at a temperature of minus 70°C before administering. Alongside storage, the cryocenter scheduled to open early next year will handle packaging, labeling and distribution required by vaccine and cell and gene therapy innovators. The site will feature freezers with a temperature of minus 80°C, liquid nitrogen (LN2) cryogenic storage tanks and walk-in 2-8°C and minus 20°C cold storage technology. The 8,000 m2 packaging, storage, logistics and distribution center at Rheinfelden, Germany, in the same region, is due to be completed by the end of December. This will significantly increase the CDMO's footprint for secondary packaging, storage, logistics and distribution of clinical supplies to investigator sites across Europe. Featuring highly automated technology in a fully scalable, mixed-use space, the Rheinfelden site will serve as a strategic logistics hub for shipping by road or air, and its central location will facilitate distribution of clinical trial therapies to European patients. Both of the German facilities will use innovative and highly automated technologies to optimize efficiency and quality across the pharma services supply chain, Thermo Fisher Scientific said. According to the European Medicines agency, the clinical supply chain and logistics market in Europe is expected to double by 2025 and more than triple by 2030.

Plasmid DNA center in California

Thermo Fisher's investment at Carlsbad, where construction is due to be completed in the first half of 2021, is expected to create up to 150 jobs over the next year. The site will boost the company's clinical and commercial output of plasmid DNA used to develop and produce cell and gene therapies for cancer, as well as mRNA vaccines. It will also be capable of producing plasmid DNA as a primary drug substance for DNA therapies. The California plant featuring single-use equipment capable of handling projects up to 1,000 liters will boast digital connectivity and data visibility to smooth operations and make training employees easier, the company said. "Our new state-of-the art site will not only tackle the supply bottleneck for our customers but also uniquely positions us to deliver robust, end-to-end cell and gene therapy capabilities," said Mike Shafer, senior vice president and president of pharma services.

Covid Vaccines Dominate Dialog over Holiday Break

January 4, 2021: Unsurprisingly in view of the surging cases of Covid-19 worldwide, there was little interruption in the flow of vaccine news – or at least talk about vaccines– during the Christmas and New Year break. With the spotlight on the roll-out and the beginning of inoculation, the World Health Organization (WHO) on Dec. 31 recommended the Pfizer/BioNTech vaccine Comirnaty for emergency use worldwide, marking another first for the American-German team. This paves the way for all countries to fast-track their own regulatory approval to import and administer the shots.

UK approves Oxford /AstraZeneca vaccine

As 2021 dawned, the UK became the first county to grant emergency approval for the Oxford /AstraZeneca vaccine, followed quickly by India, where the shot will be marketed under the name Covishield. The Anglo-Swedish drugmaker said it will boost its overall production to two million doses a week by the middle of January. The British government has ordered an initial 100 million. India also has approved another Covid-19 vaccine, made by local producer Bharat Biotech, as it begins a mass immunization drive, starting with Covishield. Bharat's Covaxin brand – for which no efficacy data has been released – will be administered under stricter conditions. The government said it is in the public interest to have more options. The British product is being made locally by the Serum Institute of India (SII). The world's biggest vaccine producer has already stockpiled more than 50 million doses, even in the absence of a formal supply deal.

Novavax candidate starts Phase 3 trial

US biotech Novavax announced on Dec. 28 that it has begun a large late-stage study of its experimental Covid vaccine in the US in Mexico. The trial had been delayed twice due to problems in scaling up the manufacturing process. It plans to enroll up to 30,000 volunteers across about 115 sites. The company, which lags other producers, has signed supply agreements with several countries and has agreed to provide 60 million doses to the UK, where it also has an ongoing Phase 3 trial. Alongside tangible progress, there was intense discussion over the holidays about the timetables for shots, handling of the fragile ingredients and the general availability of the vaccine in various countries. Frustration over a perceived inadequate supply led to public criticism of national leaders, while government authorities criticized vaccine developers for moving too slowly.

Moderna vaccine set for EU approval

In the EU, the European Commission has faced ire for not ordering more doses of the Pfizer-BioNTech vaccine already approved by the European Medicines Agency (EMA) or the Moderna candidate set to be approved on Jan. 6, rather than signing up for vaccines that have not yet been approved. In this context, German health minister Jens Spahn urged the EMA to quickly approve the AstraZeneca candidate, even though efficacy concerns persist. To bridge the European supply gap, Germany-based BioNTech has now asked the EMA to allow doctors to draw a sixth dose from vials, if possible, rather than the five currently approved. The producer said the amount remaining in the vials can vary according to the type of needles and syringes used, adding that the vials are filled with more vaccine than necessary to ensure at least five doses can be drawn efficiently. With a sixth dose, hundreds of thousands of additional doses could become available in Germany alone during the first quarter, BioNTech CEO Ugur Sahin suggested in an interview with news magazine Der Spiegel. Regulators in the US, Switzerland and the UK already allow up to six doses, he said. Also facing criticism for a perceived shortfall, the US government has ordered an additional 100 million doses of the Pfizer-BioNTech vaccine to arrive in the second quarter of 2021, as well as 200 million additional doses from Moderna. The AstraZeneca/Oxford candidate has not yet been approved by the US Food and Drug Administration (FDA).

Should vaccine delivery be spaced or mixed?

Another solution for improving vaccine supply that has emerged in the UK is also the subject of a debate, with the pros and cons fiercely defended by the respective sides. The government of prime minister Boris Johnson, trying to get a grip on distribution problems, has presented a "mix and match" inoculation strategy, under which recipients could be given a shot of whichever vaccine is available in the second round, independent of which they received first. A related strategy also propagated in the UK is to extend the interval between the two shots to allow more people to receive a first dose. Many experts have been critical of this approach, in particular vaccine makers, who have noted that the length of the interval between shots was an important criterion in the efficacy calculation during clinical trials. Oxford University scientists have meanwhile blamed the UK for not building up an adequate manufacturing structure. A similar blame game is being played in the EU, where national governments, including Germany's, have suggested that the developers license their technology to larger drugmakers, who could churn out additional doses of vaccine. Vaccine makers point out, however, that the mRNA technology in particular requires highly specialized knowhow that cannot simply be outsourced to others manufacturers, even to another biopharma company. While BioNTech can fall back on Pfizer's capacity for its US vaccine manufacture, it continues to stress that it is looking for new CDMO partners in Europe to secure a larger supply of individual vaccine ingredients.

UK Approves Moderna's Covid-19 Vaccine

January 11, 2021: The UK's Medicines and Healthcare Products Regulatory Agency (MRHA) cleared US biotech Moderna's mRNA-based Covid-19 vaccine for emergency use on Jan. 7, bringing the number of vaccines available in the country to three. At the same time, the British government ordered an additional 10 million doses, with a targeted supply of 17 million. Starting in spring, at least three different vaccines will be available for the UK's stepped-up immunization program. After issuing an Emergency Use Authorization (EUA) for the Pfizer-BioNTech shot in early December, London approved the AstraZeneca / Oxford University later in the month. Altogether, the UK, which was the first to begin vaccinating, has nailed down 367 million doses of seven different vaccine candidates, including 40 million of Pfizer-BioNTech's and 100 million of Oxford-AstraZeneca's, all under an emergency use authorization. Phase 3 clinical trials showed the Moderna and Pfizer-BioNTech shots to be 94-95% effective. According to Johns Hopkins University in the US, whose figures are considered by many to be the most accurate worldwide, Britain has close to 3 million confirmed cases of Covid-19virus, and more than 78,600 related deaths.

Europe orders more vaccine as criticism mounts

With its vaccine now on the market in the US, UK and the EU, Moderna is said to be moving close to fulfilling its target of delivering altogether 1 billion doses worldwide during 2021 in the best case scenario. Last week, it raised its low-end estimate from 500 million to 600 million. The US alone increased its planned offtake by additional 100 million for a total of 200 million. Canada and Israel also have greenlighted the Moderna shot. Next to the UK, Israel is one of the world's most avid immunizers. Prime minister Benjamin Netanyahu, who is facing re-election, is aiming to vaccinate all citizens by spring. The country has come in for criticism, however, as it reportedly does not plan to vaccinate non-citizens in the occupied West Bank territories. In the next few days, Moderna is set to begin its deliveries to the EU, which is already administering the Pfizer-BioNTech vaccine, Thus far, the 27-member bloc has signed up for 160 doses. Switzerland's drug authorities are expected to approve the Moderna vaccine by Jan. 13. According to press reports, the US biotech will deliver 200,000 doses within one day after the approval. This would be the second cleared for use in Switzerland. The Pfizer-BioNTech shot was approved in December. Meanwhile, speculation is mounting that the European Medicines Agency (EMA) could clear the AZ/Oxford candidate in late January, even if efficacy information and dosing instructions are unclear and the US Food and Drug Administration has not passed judgment on it. Brussels| rules foresee granting conditional marketing authorization only if sufficient data is made available. The European Commission already has an option for 400 doses. On Jan. 8, the Commission, which has felt the heat from some member states for ordering what was felt to be too few doses, agreed to purchase an additional 200 million units of the BioNTech-Pfizer vaccine, with the option to acquire another 100 million. In total, the EU could count on 600 million doses of this vaccine. Pfizer-BioNTech plan to provide the EU's top-up doses starting in the second quarter. Under an arrangement sealed earlier, all vaccines purchase by the bloc may be shared with neighboring non-EU countries as well as outside Europe. According to the Commission's published tally, it has additionally ordered or has an option on 405 doses of the CureVac vaccine, for which the German biotech is now cooperating with Bayer, along with 400 million of the Johnson & Johnson vaccine and 300 million of the Sanofi/GSK candidate. The latter has been held up due to internal glitches, and it is unclear when it will be ready.

J&J's vaccine is almost at the starting line

Next in line for distribution across the globe could be the modified adenovirus-based vaccine being developed by US health care giant Johnson & Johnson. Its Janssen subsidiary is expected to report interim data from its Phase 3 trial, begun in September 2020 with 45,000 participants, imminently. If the results are favorable, J& J could apply to the FDA for emergency use authorization as early as February. In this case, too the UK could be the first to pounce. It has pre-ordered 30 million doses, with an option on 22 million more. The J&J shot, which has the advantage of requiring only one dose, works by "tricking" the body into producing antigens normally found on the virus surface by using the adenovirus to deliver genetic material. Needing

only one shot would obviate the ongoing discussion over delaying the second dose to stretch supply. South Africa's Aspen Pharmacare suggested recently that it could start producing the J&J shot in late March or early April, provided the country's regulatory authorities give the green light. These doses are earmarked for export, however. South Africa is also in line to receive 1.5 million doses from the Serum Institute of India (SIL), which it plans to use to immunize local healthcare workers. Australia recently agreed to buy 51 doses of the Novavax shot, when it becomes available. The US biotech only began its Phase 3 trial in December 2020, after a series of manufacturing setbacks. The coronavirus pandemic has sickened nearly 90 million people. As of Jan, 10, at least 1.9 million people have died. The virus and its mutations have has been detected in nearly every country.

AmbioPharm Opens Shanghai Campus, Establishes Office in Switzerland

January 15, 2021: AmbioPharm, a CDMO specializing in peptide active pharmaceutical ingredients (APIs), has opened its new Shanghai campus, adding nearly 50,000 square meters of manufacturing, quality and administrative space. "We have added 4 new buildings which add to our solid-phase and liquid-phase peptide facilities at our Shanghai production site positioning AmbioPharm as the go-to source for all peptide API needs that our partners have. This is in addition to the manufacturing expansion which was completed at our USA headquarters in mid-2020," stated Chris Bai, CEO and co-founder of AmbioPharm. The company has also established a new office in Zurich, Switzerland, which is headed by Kathleen Noack, Vice President of European Sales and Marketing. Additionally, Michael Postlethwaite has joined the AmbioPharm Europe team as Sales Director, also working from Zurich. "We are delighted to add two highly experienced seasoned professionals to our European team. Both Ms. Noack and Dr. Postlethwaite come with a wealth of peptide API development knowledge to establish and extend our European partnerships," said Jim Hampton, AmbioPharm's Executive Vice President of GMP Sales and co-founder.

Angelini Acquires Arvelle Therapeutics

January 20, 2021: Italy's Angelini Pharma has entered into an agreement to acquire Swiss biopharma Arvelle Therapeutics in an all-cash transaction worth up to $960 million. The first $610 million will be paid following regulatory clearance of the deal, with a further $350 million paid if Arvelle's epilepsy treatment cenobamate achieves certain revenue targets. Arvelle is focused on developing treatments for patients suffering from central nervous system (CNS) disorders. In February 2019, it entered into an exclusive licensing agreement with SK Biopharmaceuticals to develop and commercialize anti-seizure medication cenobamate in Europe. The treatment has already been approved for partial-onset seizures in adults in the US, where it is commercially available under the brandname Xcopri. The Korean company owns 12% of Arvelle and has agreed to sell its stake to Angelini. Once the transaction has closed, Angelini will have the exclusive license to commercialize cenobamate in the EU as well as in Switzerland and the UK. The European Medicines Agency is expected to approve the therapy this year. "This transaction will propel us into a leading European player, well positioned to address the needs of patients with different Central Nervous

System (CNS) disorders through an innovative portfolio, distinctive medical capabilities and extensive commercial presence, also via the opening of direct affiliates in France, UK, Nordics and Switzerland by 2022," said Pierluigi Antonelli, Angelini Pharma's CEO. Angelini Pharma is focused on therapies for mental health (including pain), rare diseases and consumer healthcare. In March 2020, the Rome-headquartered firm acquired GlaxoSmithKline's ThermaCare global business rights, excluding North America. The deal included a dedicated manufacturing site for ThermaCare products in Albany, Georgia, USA. ThermaCare uses patented technology to produce heat to help rebuild damaged tissue and accelerate healing. Heat therapy is widely known to help ease muscle pain, reduce soreness and loosen tight muscles.

Lonza to Sell two Capsule Sites to NextPharma

January 20, 2021: Swiss CDMO Lonza said it intends to unload two of its capsule production sites, at Ploermel, France, and Edinburgh, Scotland, for an undisclosed sum to London-based CDMO NextPharma. The proposed deal is subject to regulatory approval. According to reports, most of the affected employees are expected to transfer to the new owner. Both the French site employing around 260 permanent staff and the Scottish facility with 130 staff produce liquid-filled hard capsules (including Licaps-based products) and softgels (both high potent and hormonal products) for the pharmaceutical and consumer health and nutrition markets. With the divestment, Lonza said it plans to exit both softgels and liquid-filled hard capsules for the pharma market but retain capability for feasibility studies as part of its technology offering to customers in consumer health and nutrition applications. In the latter application, the company will continue to produce lipid capsules at its plants at Colmar, France; Greenwood, South Carolina, USA and Sagamihara, Japan. Lonza said capsules, including Licaps for nutrition, remain core to its portfolio, which it beefed up with the 2017 acquisition of then US-based Capsugel for $5.5 billion. The Swiss player recently announced it would spend 85 million Swiss francs ($93 million) to expand capsule manufacturing capacity by 15%, or 30 billion capsules annually. The expansion will be rolled out across eight production sites globally, including Bornem, Belgium; Haryana, India; Jakarta, Indonesia; Puebla, Mexico and Suzhou, China, in addition Colmar, Greenwood, and Sagamihara. NextPharma specializes in oral and topical (including sterile ophthalmic) finished dosage forms. In picking up the Lonza assets, the CDMO said it plans to develop and broaden its technology offering into lipid based finished dosage forms, softgels and liquid-filled hard capsules) along with offering high potency capabilities and New Chemical Entity development services to both existing and new customers.