

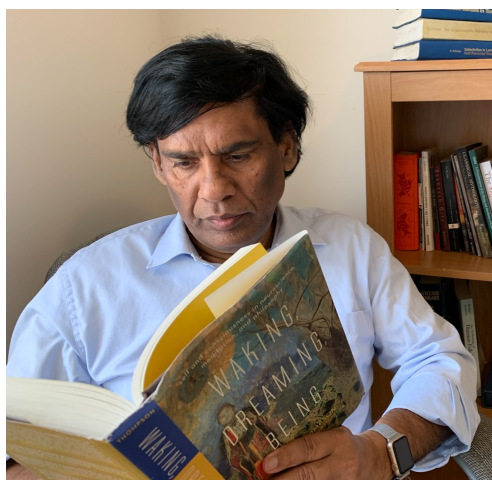
Meet Dr. Bhaskar  
Guntoori

Partner Success  
Discovery to Clinic

Virtual  
Learning

Cell & Gene  
Therapy Services

Chemistry Services:  
Efficient, Safe & Green



## Meet Dr. Bhaskar Guntoori

Dr. Bhaskar Guntoori has a philosophy that he stands by—a problem is an opportunity in disguise. This positive way of thinking has allowed Bhaskar to excel from when he was a student to his current role at Pharmaron, Senior Vice President of Process Chemistry. At Pharmaron, he leads a large team of process chemists, and each day he emphasizes the importance of not just solving a problem, but creating an opportunity to learn.

Bhaskar's desire to be involved in healthcare started as a young boy in his village in India. While health issues ran rampant with no medical doctors or treatments in sight, he dreamed of filling that role so he could contribute to curing the common illnesses that troubled his community.

In high school, he made a strong connection with a teacher who introduced him to the exciting world of chemistry. Here, he recognized that by learning organic chemistry and biochemistry, he could make an impact with the discovery of new medicines, and it soon became his lifelong passion. From the early days of his career to today, he's been at the forefront of driving research and production of new drugs.

This July, Bhaskar celebrates his tenth anniversary at Pharmaron. During this time, he has played an integral part in growing the process chemistry department, thus supporting a key role in many partners' drug R&D success. Once a team of 50 in Beijing, his process chemistry team now has over 700 chemists that span across several locations in China, including Beijing, Tianjin and Ningbo.

Under Bhaskar's leadership, the team has grown from providing only a handful of APIs/Intermediates in 2011 to over 700 in 2020, which supports preclinical to late stage development and commercial API manufacturing.

Over the past decade, Bhaskar has seen the increased complexity of new chemical entities (NCE) in the industry. This has driven his team to learn and implement innovative techniques to reduce the number of steps and increase the scale of synthetic steps safely. New technologies implemented include metal-catalyzed cross couplings, enzymatic transformations, photo-redox chemistry, flow chemistry, green chemistry and asymmetric catalysis and hydrogenation processes, which then develop into robust, scalable processes for larger scale production.

As a result of implementing these techniques, Bhaskar's team has been able to significantly reduce costs and shorten timelines for our partners, while being environmentally responsible using green chemistry advancements.

The race to cure diseases and help patients globally fuels Bhaskar and his team to continuously find ways to be more efficient and innovative. His team knows that each day presents a new opportunity to learn and make a positive change.

### About Dr. Bhaskar Guntoori

Dr. Bhaskar Guntoori joined Pharmaron in 2011 and is Senior Vice President of Process Chemistry. Bhaskar received his Ph.D. in organic chemistry in 1988 from the University of Poona, India. His research work is published in 14 peer-reviewed scientific journals, and he is a co-inventor/co-author of 88 internationally issued patents/patent applications. Prior to Pharmaron, he worked at Apotex Pharmachem, Inc. (Canada) for 16 years, where he held several positions before being promoted to Senior Manager, R&D. In his spare time, Bhaskar enjoys reading books on Eastern/Western philosophy.

His favorite philosopher is Swami Vivekananda, a key figure in the introduction of Hindu philosophies, spirituality and yoga to the western world. One of his favorite quotes that provides inspiration is, "In a day when you don't come across any problems - you can be sure that you are traveling in a wrong path."

## 2 End-to-end Support from Discovery to Clinic

Our team's commitment to delivering innovative approaches allows us to better serve our partners in today's dynamic environment.

For D. E. Shaw Research, Pharmaron provided integrated, end-to-end drug discovery and development services, including medicinal chemistry, *in vitro* biology, DMPK, GLP-toxicology studies, and CMC (Chemistry, Manufacturing & Control), to enable preclinical candidate selection and drug product delivery. These efforts culminated in a recent first-in-human clinical study at Pharmaron's clinical facility (CPC) in Baltimore, MD.

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## 3 Embracing the "New Normal" of Virtual Learning

Zoom, Teams, WebEx, GoToMeeting—no matter the platform, each achieves the same goal: connecting us.

Video calls have been a lifeline to the outside world during the pandemic. From birthday parties to annual team meetings, attending these events no longer requires a trip, but instead—a click. Despite this technology being over 50 years old, it wasn't until the pandemic that it became a staple in daily life.

Video conferencing has opened the doors for our management team to 'think outside the auditorium' and provide ongoing learning opportunities for our global team and partners. Continuous learning is a cornerstone of Pharmaron's culture. By staying innovative and understanding the latest advances, our team is able to provide our partners with quality work.

Since last summer, our team has enjoyed the Virtual Lecture Series. Each month a prominent professor presents the latest novel research and innovative techniques on synthetic and medicinal chemistry topics. Presenters include:

- Prof. Michael Willis, University of Oxford
- Prof. Shu-Li You, Shanghai Institute of Organic Chemistry, CAS
- Prof. Vy M. Dong, University of California, Irvine
- Prof. Jin-Quan Yu, The Scripps Research Institute
- Prof. Paul Knochel, University of Munich
- Prof. Zhen Yang, Peking University
- Prof. Melanie Sanford, University of Michigan
- Prof. Chao-Jun Li, McGill University
- Prof. Richmond Sarpong, University of California, Berkeley
- Prof. Tomislav Rovis, Columbia University
- Prof. Scott Miller, Yale University
- Prof. Matthew Gaunt, University of Cambridge

While most are ready for the "old normal" way of life to return, we can appreciate some of the positive changes we have adopted during this period. Given their popularity and global reach, virtual learning opportunities will continue to be a part of Pharmaron's learning mix.

Professor Abby Doyle from Princeton University will give the next lecture on Thursday, July 30. To receive login details, email [bd@pharmaron.com](mailto:bd@pharmaron.com).

## 4 On the Horizon: Cell & Gene Therapy

Pharmaron's two recent acquisitions are paving the way for a new, globally integrated Cell and Gene Therapy (CGT) services platform, which marks an important milestone in the ongoing expansion of our biologics service capabilities.

In November 2020, Pharmaron acquired Absorption Systems, a US-based non-clinical CRO located in Philadelphia, San Diego and Boston. Expertise includes DMPK/ADME and bioanalysis for small and large molecules, ocular, medical device products and cell and gene therapies services for potency, biodistribution and immunogenicity assays.

In March 2021, Pharmaron announced its definitive agreement to acquire Allergan Biologics Limited in Liverpool, UK, from AbbVie and on April 30, the transaction was completed. Our Liverpool site is a flexible cGMP biomanufacturing facility with state-of-the-art capabilities that include process R&D, cGMP manufacturing and advanced analytics supporting a range of biologic products. This MHRA accredited manufacturing site has developed and grown a solid foundation and world-class expertise in CGT product development, which will complement and synergize with the capabilities of Absorption Systems.

"The addition of this platform enhances our fully integrated, end-to-end drug R&D service offerings, which fits into our global strategy. Adding an integrated CGT services platform allows us to better serve our partners' needs in these exciting and emerging therapies," said Dr. Boliang Lou, Chairman and CEO, Pharmaron.

## 5 Achieving the Chemistry Trifecta: Efficient, Safe & Green

With every chemistry project, Pharmaron is committed to implementing innovative ways to improve efficiency, ensure the basis of safety and increase sustainability. Technologies such as high-throughput reaction screening, biocatalysis and flow chemistry are vital components to achieving these critical goals.

Our automated high throughput reaction screening platform leveraging ChemSpeed and Quantos hardware has shown excellent time-saving and optimization results for process, development and manufacturing and discovery chemistry settings. For example, the solid dispensing tool allows for solid base/additives dispensing faster and more accurately, without the need to individually weigh each vial. Pharmaron has also built custom workflows for data analysis and visualization, which allows for a rapid understanding of the optimization landscape.

Biocatalysis is an efficient and effective method to catalyze chemical reactions by using natural substances that include enzymes from biological sources or whole cells. For scale-up compound production, biocatalysis simplifies processing and purification as it generates fewer by-products, reduces steps since protecting/deprotecting isn't required and has high stereoselection, which avoids the need for chiral separation.

Flow chemistry continues to be an effective approach for reaction selectivity. With its ability to run a reaction in a continuous stream rather than a batch production, the output is faster, more efficient and safer. We recently completed a 440kg flow chemistry campaign. After optimization, the cost decreased by 30% through increased efficiency of the process and reduction of the solvent usage by 44%.