

April 20, 2020



## **Anixa Biosciences and OntoChem Announce Collaboration to Develop Novel COVID-19 Therapeutics**

**Anixa to Host a Conference Call Tuesday, April 21, 2020, 4:15 p.m. ET to Discuss COVID-19 Project**

SAN JOSE, Calif., April 20, 2020 /PRNewswire/ --[Anixa Biosciences, Inc.](#) (NASDAQ: ANIX), a biotechnology company focused on the treatment, prevention, and diagnosis of cancer and infectious diseases, today announced that it has entered into a strategic collaboration with OntoChem GmbH to discover and develop anti-viral drug candidates for COVID-19.

Dr. Amit Kumar, President and CEO of Anixa Biosciences stated, "There are a number of drugs that are either in, or will shortly be in, clinical trials against COVID-19. While we unquestionably hope one or more of those drugs is successful, we must note that all those drugs were developed for other viruses and other diseases. During this very acute pandemic, it's expected that previously developed molecules will be tried, to quickly determine if something is effective. However, we believe that newly designed drugs that are purposefully developed to specifically target SARS-CoV-2, enabled by the recent studies of the molecular biology of this virus, will have the potential to be far more effective than hoping to get lucky with a repurposed drug. Therefore we are initiating this program to identify drugs that may have much greater efficacy. Additionally, the research plan is designed to identify compounds that might have efficacy not only against SARS-CoV-2, but other similar viral diseases as well."

While Anixa has primarily focused in oncology, its nimble and flexible capital efficient business model, enables it to effectively address new critical unmet needs such as this dynamic pandemic. Further, Dr. Kumar has previous experience working in the infectious disease area, including work done with the SARS-virus that emerged in 2003. In fact, Dr. Kumar and his company at that time, worked with a number of government agencies including the Department of Defense to develop technologies to detect and monitor deadly infectious diseases. In performing that work, Dr. Kumar made presentations to various members of the U.S. Senate and House regarding upcoming and emerging diseases. Considering the acute public health and economic problems caused by COVID-19, Anixa felt

it was important to utilize its expertise and leverage its business model to address this pandemic.

Dr. Kumar continued, "We are pleased to be working with OntoChem for the discovery and development of new drug candidates for COVID-19. OntoChem has developed the world's largest chemistry and gene ontology databases and search capability and has assembled large, proprietary, *in silico* libraries of chemical compounds that could disrupt the ability of SARS-CoV-2 to replicate. *In silico* refers to the existence of compounds in a computer database with detailed molecular structures. In addition to its proprietary libraries, OntoChem has access to other libraries of potential drug compounds. After recent publications of the RNA sequence, as well as key crystal structures of certain enzymes of the virus, we approached OntoChem to collaborate on a project to utilize their proprietary technologies for drug discovery."

Dr. Lutz Weber, President and CEO of OntoChem stated, "The discovery of investigational drug candidates can ordinarily take several years. However, through this collaboration, we anticipate identifying multiple drug candidates in as little as six months' time. To do this, we will utilize advanced computational methods, machine learning and molecular modeling techniques to perform *in silico* screening of over 1.2 billion compounds to evaluate if any could disrupt one of two key enzymes of the virus. This comprehensive group of over 1.2 billion compounds includes publicly available and OntoChem's proprietary libraries. To our knowledge, this project will utilize the largest number of compounds with the broadest chemical diversity ever tried against SARS-CoV-2. Due to the size and diversity of the compounds, we are very optimistic about success. After identifying key compounds, we will have them synthesized and evaluated in biological and cellular assays to assess their potency. Following that work, we hope to have a small number of candidates that can be taken into animal studies."

Dr. Weber continued, "This project is a very promising approach to identifying and developing a drug specifically for COVID-19. Following publication of recent information about COVID-19, we were evaluating certain projects addressing this disease agent. We were pleased that Anixa proposed this collaboration to work together using both companies' collective expertise and our proprietary technologies."

### **COVID-19 Program Description:**

The Anixa-OntoChem COVID-19 program will focus on two specific proteins of the coronavirus. The first protein is the main protease, M<sup>pro</sup>, which is an enzyme of the virus that severs a large poly-peptide into functional proteins that enable the virus to replicate in the human host. The program will attempt to identify molecules that inhibit the function of this enzyme, and potentially stop or slow down the virus' ability to replicate and cause disease. Since this protease does not have human analogs, potential inhibitors may not affect any human proteins and therefore toxic side effects may be minimized. Several crystal structures of this enzyme have been published, including a high resolution image published on March 20, 2020 (*Science* 2020, DOI [10.1126/science.abb3405](https://doi.org/10.1126/science.abb3405)), which induced Dr. Kumar's interest in targeting this protein. Using high performance computing and artificial intelligence, Anixa and OntoChem will identify molecules in the various libraries comprised of 1.2 billion compounds, which might inhibit this protein. One very attractive chemical library is a proprietary, multi-component reaction library created and owned by OntoChem utilizing its extensive database of chemical reactions.

The second target is an endoribonuclease, which plays a role in breaking up the ribonucleic acid, or the genetic content, of the virus. Recent studies have demonstrated that the endoribonuclease of many viruses, including the SARS virus of 2003 and it is believed the SARS-CoV-2, binds to a human host protein. This protein-protein interaction appears to dramatically increase the infectivity of the virus. Because this interaction between a viral protein and a human protein appears to be common to many viruses, compounds that are able to effectively disrupt this interaction could function as broad spectrum anti-virals in addition to addressing COVID-19.

After identifying promising molecules through *in silico* screening, Anixa and OntoChem will evaluate the molecules' potential side effects, as well as their drug-like characteristics. The molecules will then be synthesized and their activity will be evaluated with certain types of assays, which may include binding assays, cellular assays, and the ability to reduce viral activity. Upon completion of this biological testing, the lead compounds will be tested in animals to determine which compound may be appropriate for clinical evaluation.

#### **Conference Call Information:**

Anixa will host a conference call and live audio webcast Tuesday, April 21, 2020, at 4:15 p.m. ET. Interested participants and investors may access the conference call by dialing:

- (877) 876-9174
- Conference ID: Anixa

An audio webcast will be accessible via the Investors section of the Anixa website at <https://ir.anixa.com/events>. An archive of the webcast will remain available for 30 days after the call.

#### **About Anixa Biosciences, Inc.**

Anixa is a publicly-traded biotechnology company developing a number of programs addressing cancer and infectious disease. Anixa's therapeutic portfolio includes a cancer vaccine technology focused on the immunization against α-Lactalbumin to prevent triple negative breast cancer (TNBC), a cancer immunotherapy program which uses a novel type of CAR-T, known as chimeric endocrine receptor T-cell (CER-T) technology, and a COVID-19 therapeutics program focused on inhibiting certain viral protein function. The company's diagnostic portfolio consists of Cchek™, a liquid biopsy technology for early detection of solid tumors based on the body's immune response to the presence of a malignancy. Anixa continually examines emerging technologies in complementary fields for further development and commercialization. Additional information is available at [www.anixa.com](http://www.anixa.com).

#### **About OntoChem GmbH**

OntoChem GmbH is a German based company which is specialized in chemo- and bio-IT services. As a data-driven company, OntoChem is using AI techniques to answer project specific questions and is supporting scientists to discover knowledge in the life sciences eco-system. OntoChem is located in Halle (Saale) and Stuttgart. Having started in 2005, the team has a long history of developing and applying ontologies, software tools and data streams for life and material science customers. More on OntoChem at [www.ontochem.com](http://www.ontochem.com).

**Forward-Looking Statements:** Statements that are not historical fact may be considered forward-looking statements within the meaning of the Private Securities Litigation Reform

Act of 1995. Forward-looking statements are not statements of historical facts, but rather reflect Anixa's current expectations concerning future events and results. We generally use the words "believes," "expects," "intends," "plans," "anticipates," "likely," "will" and similar expressions to identify forward-looking statements. Such forward-looking statements, including those concerning our expectations, involve risks, uncertainties and other factors, some of which are beyond our control, which may cause our actual results, performance or achievements, or industry results, to be materially different from any future results, performance, or achievements expressed or implied by such forward-looking statements.

These risks, uncertainties and factors include, but are not limited to, those factors set forth in "Item 1A - Risk Factors" and other sections of our most recent Annual Report on Form 10-K as well as in our Quarterly Reports on Form 10-Q and Current Reports on Form 8-K. We undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law. You are cautioned not to unduly rely on such forward-looking statements when evaluating the information presented in this press release.

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