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SARS-CoV-2 Testing – One Year Later



In March 2020 (March 23rd 2020 to be exact) Oak Crest began testing staff, family members, and visitors for the presence of the SARS-CoV-2 virus on nasal swabs. The test was designed in record time, and the Institutional Review Board (IRB) approval was equally fast. The protocol for testing followed CDC Guidelines and used a highly sensitive qPCR assay to screen for two sequences of nuclear protein RNA and one human gene. A positive test will reveal the presence of the two sequences of viral RNA and the human gene. A negative result will confirm the presence of the human gene but no viral RNA.



Manjula Gunawardana

Marc Baum

Peter Anton

It was Marc Baum, who, with the aid and support from Dr Peter Anton and Manjula Gunawardana, saw the looming catastrophe and pushed forward the testing protocol, the IRB application, and other associated

permissions. By doing this, the team of three were able to provide a creative way of keeping Oak Crest open and active.

The last step in setting up the testing was to train four people to carry out the protocol for isolating and washing the RNA from the nasal swabs and preparing the reagent cocktails for the PCR reaction to be carried out. Our team of four, consisting of Jess Breslin, John Cortez, Sofia Rivera, and Simon Webster, have been a consistently reliable team able to carry out the assay on swabs from everyone at Oak Crest and family members. They have been performing accurate assays three times a week for the whole year, and we are thankful for their dedication to detail.



News & Events Open for Business


“Open for Business” means we have been busy. Here are some of our activities over the year.

Online Outreach

Creating an online presence was less traumatic than expected, and it brought unexpected benefits by opening up our access to students in the Los Angeles Unified School District. Through the organizational efforts of Richard Prieto, Ripsime Oganyan and Sarahi Franco, Oak Crest members were given the opportunity to virtually meet students through the LA Basin. Mr. Prieto and his team, who run the CTE Incentive at LAUSD, have been able to organize multiple online sessions where Oak Crest staff talk about their work to students and their teachers. The last meeting had 157 participants logged in, and the chat box had more questions than we could answer in the time available.

Incubator News

INVIZYNE : Team and Company Overview

 Tyler Korman, PhD Director of R&D Founder	 Paul Oppenoth, PhD Director of R&D Founder	 John Billingsley, PhD Scientist I	 James Bowie, PhD Current UCLA Founder
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We Are Looking For Good People to Join Our Team!

Process engineer
Process engineer
Molecular biologist
Technician (Protein production, purification)

Contact: Tyler Korman - tkorman@invizyne.com

Invizyne Technologies Inc., the first startup to join our Monrovia - Oak Crest Science and Technology Incubator Program (MOST-IP) in 2019, is continuing to grow at an amazing pace. Invizyne is

Interesting facts related to our SARS-CoV-2 Testing

Most important Fact:

- Number of workplace transmissions = zero.

Protecting our family was the primary reason for setting up this study and the plan to prevent transmission amongst the staff succeeded.

Other Facts

- Total tests (March 23rd, 2020 to March 12th 2021) = 4676
- Total qPCR reactions = 14,028
- Total swabs = 4010
- Total 96-well plates = ~200
- Total samples processed for serologic and metabolomic testing: 1208
- Total false positives = 0
- Total false negatives = 0
- Total positive results = 234|
- Number of donuts consumed: definitely more than 144 ;-)

Publications

Baum MM, C.M. Ramirez, J.A. Moss, M. Gunawardana, M. Bobardt, P.A. Gallay. Highly synergistic drug combination prevents vaginal HIV infection in humanized mice. *Sci Rep.* 2020 Aug 3;10(1):12995. doi: 10.1038/s41598-020-69937-5.

Aguirre, V.P., S. Jovic, P. Webster, C. Buser, J.A. Moss, L.M. Barge, Y. Tang, Y. Guo & M.M. Baum Synthesis and characterization of mixed-valent iron double layer hydroxides ("green rust"). *ACS Earth and Space Chemistry.* 2020.

<https://dx.doi.org/10.1021/acsearthspacechem.0c00272>

Gunawardana, M., M. Remedios-Chan, D. Sanchez, S. Webster, P. Galvan, R. Fanter, A.E. Castonguay, P. Webster, J.A. Moss, J. Kuo, P.A. Gallay, K.L. Vincent, M. Motamedi, D. Weinberger, M.A. Marzinke, C.W. Hendrix & M. Baum. Multispecies Evaluation of a Long-acting Tenofovir Alafenamide Subdermal Implant for HIV Prophylaxis. *Frontiers in Pharmacology Translational Pharmacology.* 2020. 03 Jun 2020, Edited by: Lei Xi. doi: 10.3389/fphar.2020.569373.

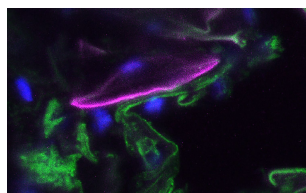
Gunawardana, M., J. Breslin, J.M. Cortez, S. Rivera, S. Webster, F.J. Ibarrodo, O.O. Yang, R.B. Pyles, C.M. Ramirez, A.P. Adler, P.A. Anton, M.M. Baum. Longitudinal COVID-19 Surveillance and Characterization in the Workplace with Public Health and Diagnostic Endpoints. *medRxiv*: <https://www.medrxiv.org/content/10.1101/2020.07.25.20160812v1>

Hooks, M.R., P. Webster, J.M. Weber, S. Perl & L.M. Barge. Effects of amino acids on iron-silicate chemical garden precipitation. 2020. *Langmuir.* doi.org/10.1021/acs.langmuir.0c00502

Perry, S., P. Goel, L.N. Tran, C. Pinales, C. Buser, D.L. Miller, B. Ganetzky, D. Dickman. Developmental arrest of *Drosophila* larvae elicits presynaptic depression and enables prolonged studies of neurodegeneration. *Development* 2020 147: dev186312 <http://dx.doi.org/10.1242/dev.186312>

Thornton, S.M., V.D. Samararatne, J.G. Skeate, C. Buser, K.P. Lühen, J.R. Taylor, D.M. Da Silva, W.M. Kast. The Essential Role of *anxA2* in Langerhans Cell Birbeck Granules Formation. *Cells* 2020, 9, 974. <https://doi.org/10.3390/cells9040974>

Webster, P., J. Cortez, S. Webster, M. Gunawardana, R.B. Pyles & M.M. Baum. Equilibrative nucleoside transporter 1 (SLC29A1) localization on vaginal epithelial cells. *J. Histology & Histopathology.* ISSN 2055-091X, Volume 7, Article 5. 2020



Webster, P., K.K. Saito, J. Cortez, C. Ramirez & M.M. Baum. Concentrative nucleotide transporter 3 is located in microvilli on vaginal epithelial cells. *ACS*

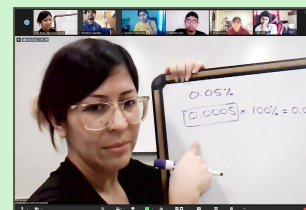
pioneering cell-free biosynthesis of chemicals (synthetic biology), has received multiple phase 1 and 2 SBIR grants and is again looking to hire scientists and technicians <https://www.invizyne.com/>. Watch Invizyne's Tyler Korman PhD, Director of R&D, present on their road to success with MADIA Tech Launch: "Biosynthesis Beyond Biology: The next wave of bio-production"

<https://youtu.be/UurkCCJfuTM>

Pathogens Core

The newly formalized Pathogens Core at Oak Crest already completed four sponsored projects with industry and academic partners. A couple of these projects involved isolation and quantification of microbes using molecular biology and biochemical assays. We were also able to optimize necessary isolation procedures for these projects. Other projects included culturing of "difficult to grow" bacterial strains and evaluation of devices to irradiate bacteria. Our collaborations include large biopharma, startup biotech and academic institutions.

Seeing Opportunity in Adversity



Through the year, Oak Crest has had to adapt to the changing conditions by either postponing programs or switching them to online events. For example, we were not able to host high school and community college students to participate in our mentored research programs, but we were able to reach small groups through online sessions. In fact, the switch to online activities has enabled us to reach more diverse student groups throughout the Greater Los Angeles Area.

2020 has been a devastating year for everyone. However, our rapidly implemented COVID-19 testing program softened the impact of the pandemic for Oak Crest and its employees. By remaining active the pandemic has brought us many unexpected benefits that we hope to build on as we all slowly return to normal.

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