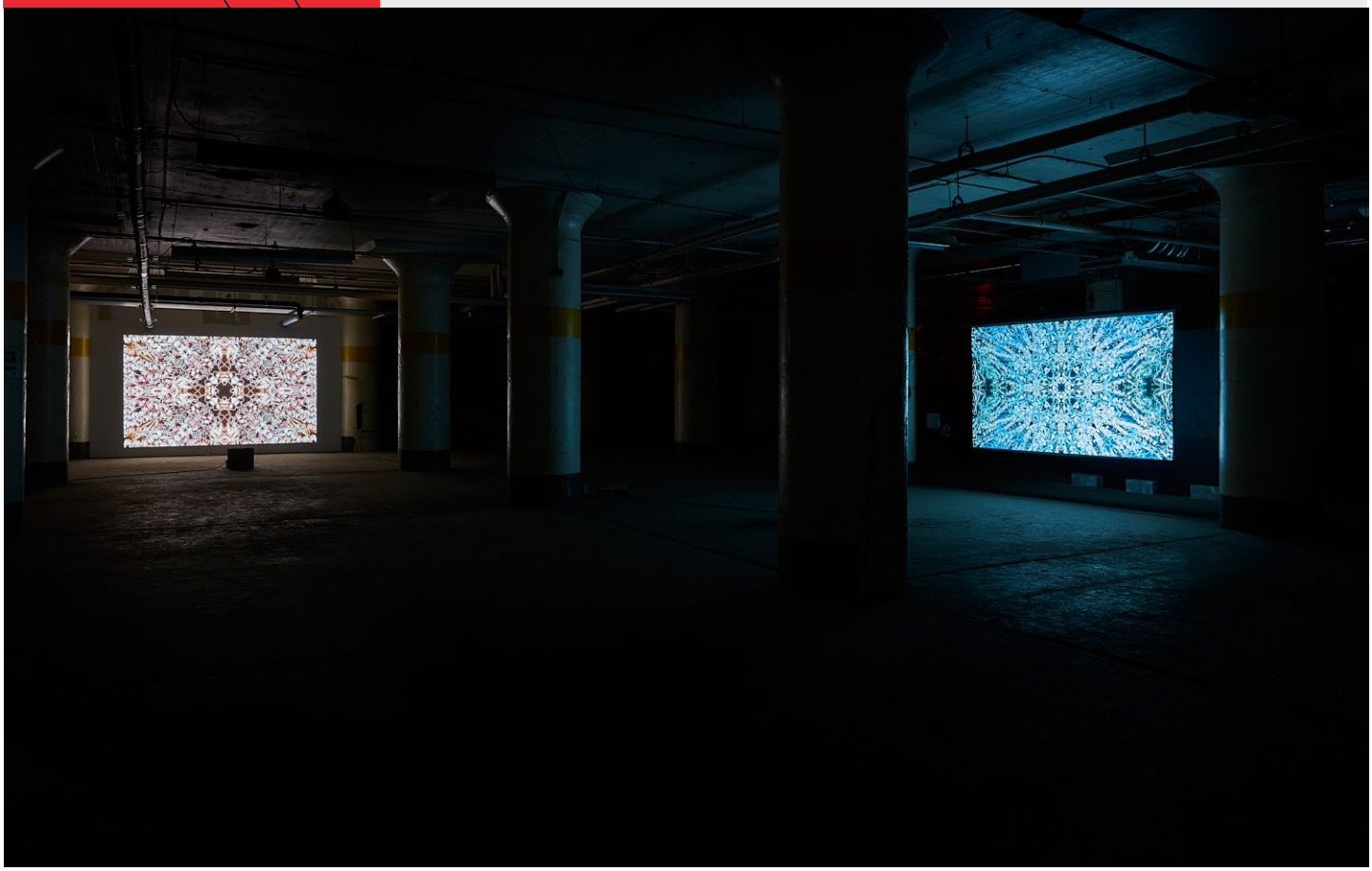
BLOG | ARTICLE

The Structure of SARS: A Dangerous Beauty in Constant Flux

BY ANGELA MCQUILLAN | NOVEMBER 19, 2020



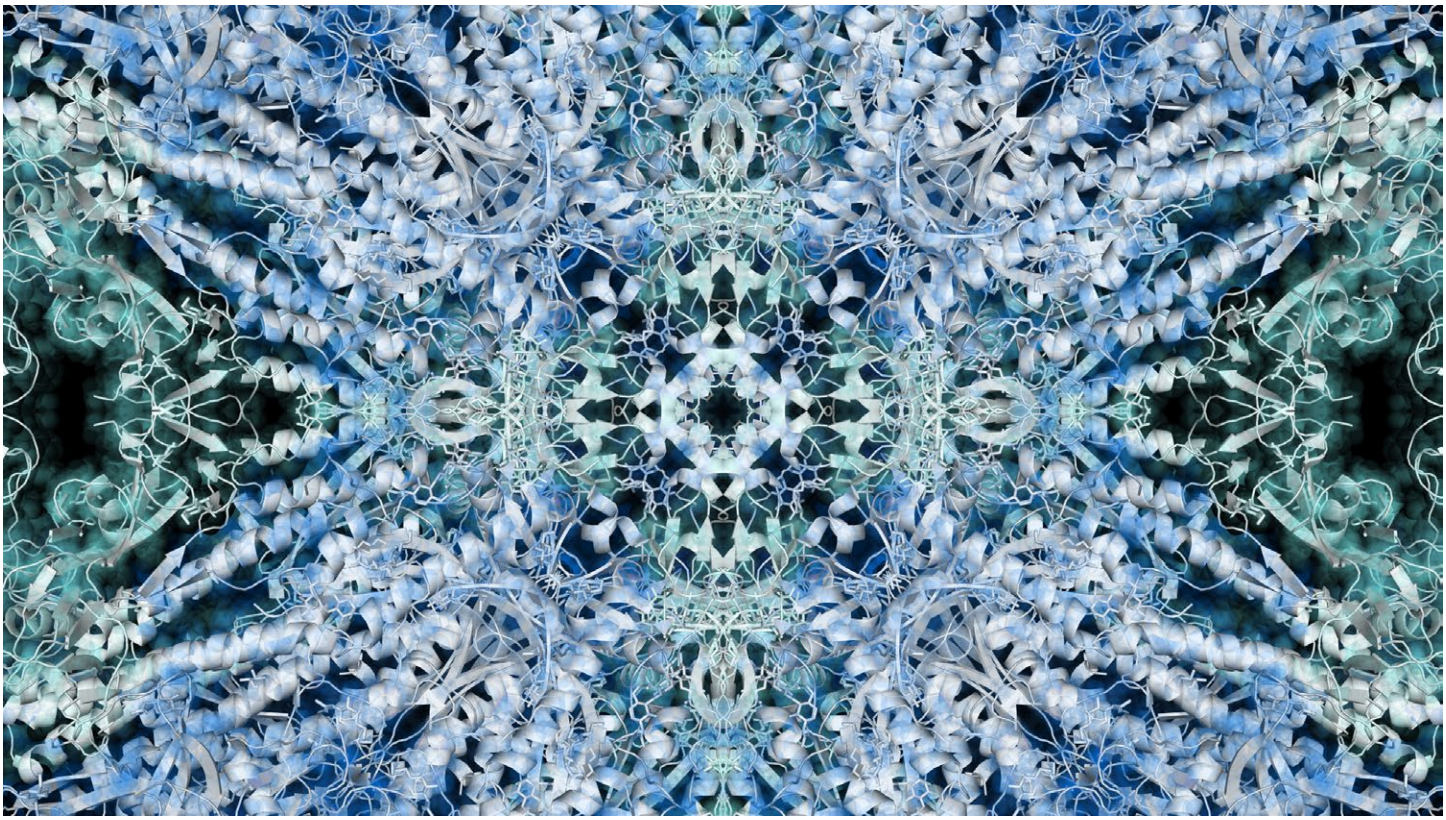
"...Looking at these hypnotizing structures is a moment of ephemeral divinity; a tiny glimpse into the dangerous beauty of the world of the virus..."

Flying Slippers

The Structure Of SARS: A Dangerous Beauty In Constant Flux
Review by Angela McQuillan
November 19, 2020

https://sciencecenter.org/blog/the-structure-of-sars-a-dangerous-beauty-in-constant-flux

Upon entering the first-floor of our Quorum Lounge this past month, visitors were confronted by screens playing videos of dazzling kaleidoscopic animations in rotating color patterns. Under closer inspection, the viewer was able to discern tiny molecular structures, and those with an advanced understanding of molecular biology might even recognize alpha helices and beta pleated sheets.

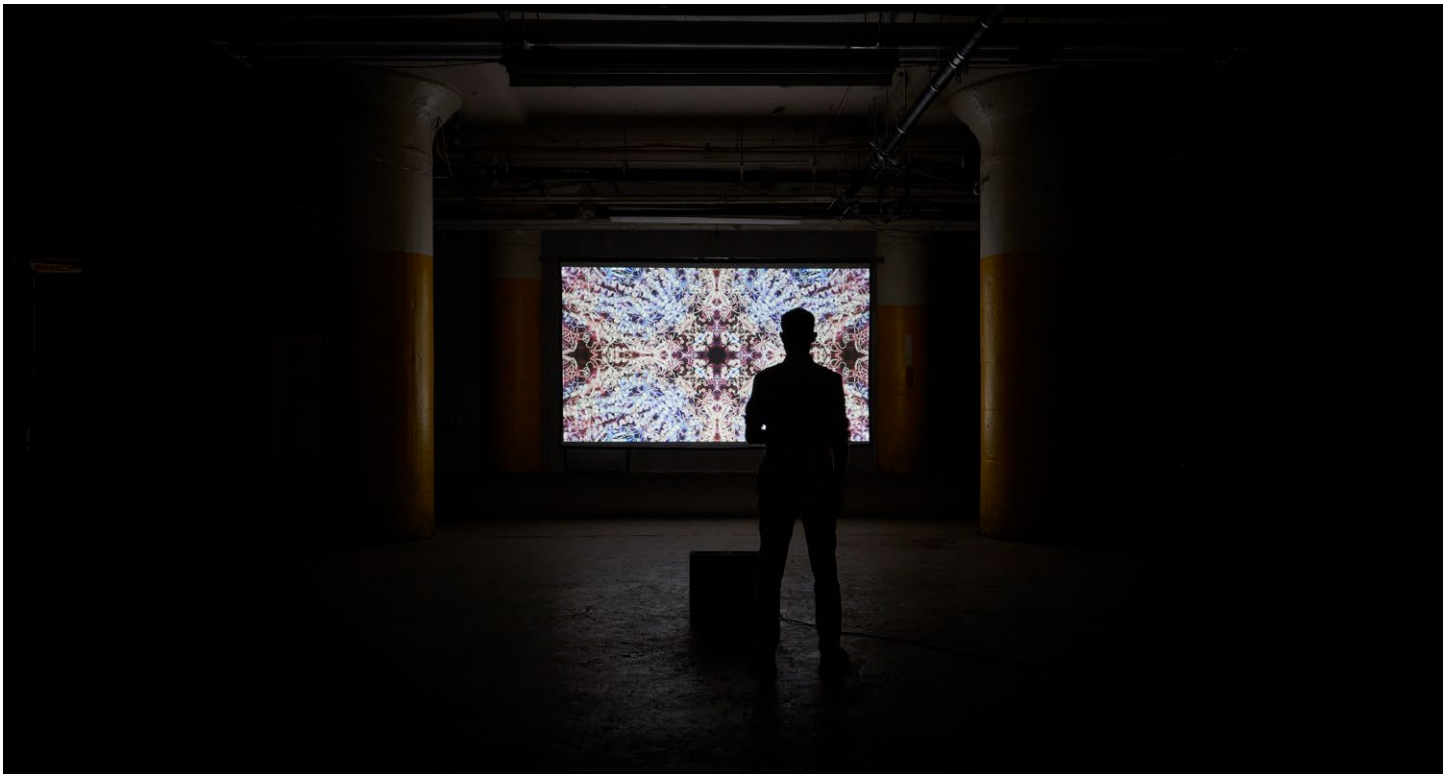


Disrupted Domains, a new exhibit by Science Center BioArt Resident, Laura Splan, was created with molecular visualization software and models of SARS-CoV-2, the virus that causes COVID-19. These molecular animations were made during Splan's second residency, in a remote collaboration with scientists from the uCity Square based biotech company Integral Molecular.

With recent city guidelines prompting another closure of Quorum for the foreseeable future, the name Disrupted Domains has become even more appropriate, seeming to describe not just the artwork itself but the space where it was briefly shown to the public. Fortunately, we're able to preserve some of its affects in this post and on Splan's website.

Laura Splan's first artist residency at Integral Molecular began in 2018 as part of the BioArt Residency Program, which consisted of a three-month research period in the laboratory at Integral Molecular, and

culminated in her solo exhibition Conformations at the Esther Klein Gallery the following year. This exhibition investigated the inner workings of a biotechnology laboratory while exploring the use of laboratory llamas and alpacas for antibody production. One of the works from this show entitled Tickling the Bonds featured an animation created with the molecular modeling software Pymol, where the artist manually manipulated the structure of an alpaca nanobody protein to initiate generative movements between neighboring amino acid residues. This work illustrated the artificial unravelling of long strands of protein that resembled piles of tangled thread, referencing previous works by Splan that involved fiber-art and the use of technology.

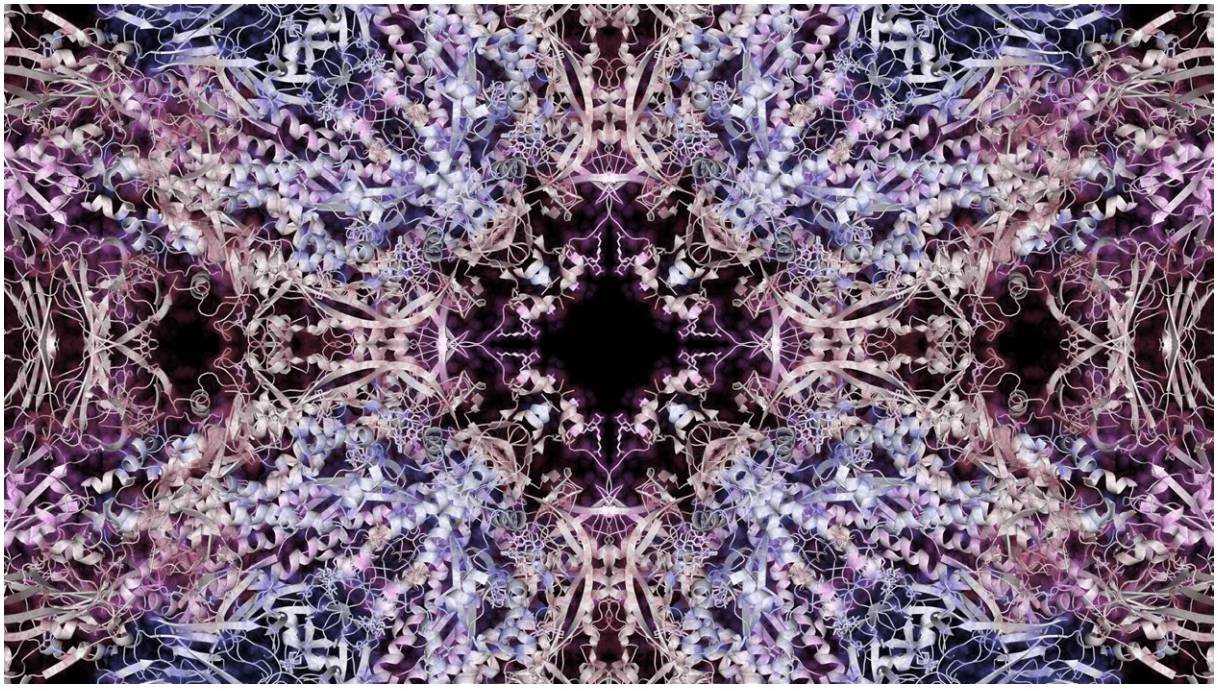


After this exhibition, Laura Splan continued to work in Pymol and her visualizations became more intricate and advanced. In early 2020, she was invited back to Integral Molecular to complete a second residency, only this time as a remote collaboration through Zoom with IM scientists Dr. Benjamin Doranz and Dr. Edgar Davidson. Splan explains that “by using the specialized features of the software in unconventional ways, I unravel and distort the folded structure of the coronavirus spike protein. I playfully manipulate the folded forms, known as “conformations”, which determine biological function including infectivity.” This collaborative research project culminated in a series of animations that were first exhibited at the 15,000 square foot BioBAT Art Space at the Brooklyn Army Terminal in an exhibition titled Unraveling and most recently Disrupted Domainsin Quorum.

The exhibition in Quorum also included a sound component in a collaboration with musician Frank Masciocchi, who works as a Lab Instrumentation Engineer at Integral Molecular. Viewers were invited to scan a QR code leading them to Termination Sequence (Into the Void), a Zoom recording of a live improvised electric guitar performance that involved Frank playing “A” notes and chords 33 times ¬– the number of adenine nucleotides at the end of the mRNA termination sequence of SAR-CoV-2. Integral Molecular scientist and guitarist Dr. Joseph Rucker also created his own rendition on acoustic guitar entitled Termination Sequence (Awkward Goodbye).

My initial thoughts when first encountering this work is that it reminded me of playing with a kaleidoscope as a child. These unique toys were always so magical in their endless configurations of symmetrical patterns created from tiny pieces of colored glass. Kaleidoscopes are symbols of constant change, with every tiny movement by the viewer the pieces shift and permanently alter the reflected image. Each configuration is completely unique and unpredictable, forcing the viewer to savor the moment before the pieces inevitably get shaken up again and you get a completely new image; different but beautiful in its own way.

The coronavirus has shaken up all of our lives in myriad ways, destroying established modes of thinking, exposing our weaknesses and forcing us to adapt to new and challenging circumstances. The world will never be the same as it was pre-COVID-19, and the only way we will get through it is to learn to be adaptable to these new challenges. After being shaken, the tiny pieces inside of a kaleidoscope will always settle again, just in a different arrangement.



Laura Splan's molecular animations capture the transitory beauty of the SARS-CoV-2 molecule undergoing conformational changes. Disrupted Domains highlights the majestic aesthetic qualities of processes that happen inside of a body that are invisible to the human eye. How can a virus be so magnificent and yet so deadly? It is a reminder to remain humble when confronted by the sheer magnitude and power of the natural world. Looking at these hypnotizing structures is a moment of ephemeral divinity; a tiny glimpse into the dangerous beauty of the world of the virus.