07.January.2021, mjd
Traverse City, Michigan

The following is a running-workbook for materials that will form released publications, presentations and lectures, focusing upon

TBD – (Topological Biological Dynamics)
ICMC Project – (Immuno Cyto Molecular Computation/Communication)
Topological Communications and Control within Biological Processes including Infection, Immune Response, and Fundamental Cellular Differentiation and Growth (Mitosis Regulation)

Components
VESID - Viral Entry Structural Integrity Disruption (incl. MACE - *Mimic for ACE2 Receptor*)
ANCES - Autonomic Neurophysiological Control and Electromolecular Stress (dysautonomia and autoimmune focus)

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[1]

Psychosocial Factors as Consequences and Enhancers in Inflammatory and Systemic-Pathology Communicable Diseases – COVID-19 as a Contemporary Example

M. Dudziak, P. Marijuan, C. Skelly, J. Tang, R. Csencsits, R. Roman

The impact of COVID-19 is unique and unparalleled in human history with a phenomenology that extends beyond that of a traditional epidemiological event. The pandemic that began in spring of 2020 provides a demonstration of several points involving psychosocial integrity that are critical to the future resilience of humans as individuals and as social groups with respect to similar pandemic-type events where catastrophes impact entire societies for extended periods wirth uncertain terminations. Such events include those that may originate from non-biological causes and yet lead into consequences, including neurophysiological debilitation, that open pathways for extensive and heightened infectious diseases such as COVID-19. These consequences may include similar ranges of effects in terms of multi-system pathologies in the human organism, involving neurological and cardiovascular diseases, multi-organ inflammations, intensified cytokine storm events and deficiencies in huyman immune response and control, and overall long-term behavioral debilitation. The health of humans as individuals and groups involves a complex array of social communications that play roles in providing a reduction of internal tension, conflict and angst. These include behaviors customarily understood as leisure, relaxation, diversion, and play. Severe and prolonged disruption of customary behavioral cycles and social engagement/interaction between individuals and among groups is shown to create, accelerate and intensify stressor effects within particularly the autonomic nervous system

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and the immune system. Enhancement of inflammatory reactions, particularly to viral infections, and the onset of certain neurological autoimmune disorders, is shown to increase probabilities of both primary and secondary infectious diseases and intensification of the diseases within multiple organ systems, particular cardiovascular and central nervous systems. A variety of prophylactic and responsive measures are discussed for mitigating these highly adverse "positive feedback loop" processes in the future.

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[2]

Averting runaway positive-feedback inflammatory cycles in a society under "Sturm und Drang" Stress and Disruption of Social Equilibrium

M. Dudziak, P. Marijuan, J. Cabral, M. Kalabina, E. Levin, R. Kastner

Intensification of both contagion and severity of infection within the COVID-19 pandemic has varied extensively among different social groups and nations. The vast majority of attention has been directed to topics concerning the physical factors of microbial (in the case of COVID, viral) infection and conventional analysis of methods of diagnosis and treatment. We introduce the importance of other factors that can be linked with increased or diminished immune strength and response as well as resilience within an infection cycle for individuals and close groups. These factors include self-perception and the resilience to informational signal/noise conflict, including a bifurcation phenomenon within psychological processes that bears examination for neurophysiological consequences at the cellular and molecular biological levels. We introduce concepts from fundamental models of signal processing and mechanics to open a new avenue for identifying causal factors involved in the reduction of systemic resistance and integrity in defense against diseases that affect the basic structure of human social life in home and occupational environments. These investigations point to the role of social interaction and its disruption as being potentially among the most significant but thus-far ignored factors in the wide differentiation and disparity among many demographic elements in terms of infection and severity including lethality. We examine several avenues for reducing the most impactful factors, through a combination of protocols including new models for personal and environmental antimicrobial bioprotection, public hygiene and nutrition education, resource management for diagnostics and therapeutics including medication, and methods for reducing significantly the amount and intensity of misinformation and confusion in a society that is highly dependent upon mass-media and social network communications.

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