

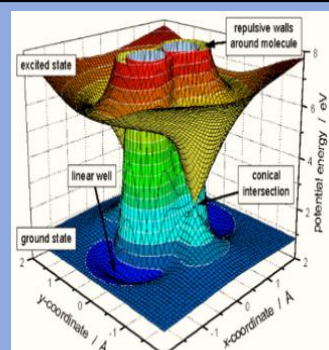


# CENTER FOR MOLECULAR DESIGN AND DEVELOPMENT

## Quarterly NEWSLETTER

Issue 1: FALL 2018

### RESEARCH DEVELOPMENTS



#### About Us:

A new research center which is engaged in some very significant projects on homeless diseases, breast cancer, foodborne diseases and sustainable energy.

#### Our Mission:

Our mission is to use state-of-the-art modeling capabilities to provide predictive tools for creating new molecular systems with desired properties. Treating diseases, which most medical research laboratories are not researching, will be one of our primary missions. We like to call these diseases "homeless" since they have no "home" research facility investigating them. A second mission will be to provide a platform for the enhanced education of students at the undergraduate and advanced degree levels of education. CMDD will be a multi-institutional facility with a number of in-state (i.e. UA Fayetteville) and out-of-state research institutions (i.e. NASA, Oak Ridge, VCU, Purdue) and will function as a national resource. It is our mission to provide hope for the treatments and cures for some of least-researched medical conditions using the most advanced molecular modeling and bioinformatic procedures known.

### About the Center for Molecular Design and Development

Current work and direction for Center for Molecular Design and Development (CMDD)



Director for CMDD and research professor, Dr. Jerry Darsey was invited this past summer to present a talk at the 4<sup>th</sup> International Conference on Biomedical Polymers and Polymeric Biomaterials in Krakow, Poland for his work on, *Modeling Computational Studies of Modified Drug Molecules Binding to the LRRK2 Protein in the Treatment of Parkinson's Disease*. Due to the increasing interest on Artificial Intelligence (AI) research, Dr. Darsey has been asked to participate in several international conferences including Aberdeen, Scotland and Manchester, England in the past four years. As Artificial Intelligence procedures gain increasing attention, further research will be done to explore this field.

The Center for Molecular Design and Development is completely self-funded relying on grants and private support. Grants that have been sent and are in the process of getting reviewed include: *Non-invasive Diagnosis of Endometriosis Using Ultrasound Imaging Systems Modeled with Artificial Intelligence Methods to Department of Defense (DoD)*, *Drug Design and Discovery using Artificial Intelligence Methods and High-level Quantum Mechanical Simulations* (SONY Grant), *Advanced Non-Invasive Diagnosis Using Ultrasound Imaging Systems and Artificial Intelligence Methods* (SONY Grant), *The Use of EEG for the Early Detection of Parkinson's and Alzheimer's Disease* (Michael J Fox Foundation for Parkinson's). **To help, please visit us at [cmdd.ualr.edu](http://cmdd.ualr.edu).**

### A positive change for the future outlook of crops

A solution developed to potentially reduce bacterial and fungal growth on produce.

It is estimated that tens of millions of dollars in food goes to waste due to spoilage. Hence, shelf-life extension is a high priority and if an all-natural solution could be developed to preserve food for an additional few days, the potential would significantly impact food supply worldwide. A research project was developed to enhance produce shelf-life by applying a solution made from all natural ingredients including organic acids, alcohols and polyols. The production of these solutions and using various ratios of its constituents, into environmentally safe anti-microbial and anti-fungal solutions, is used to decrease bacterial and fungi growth and lead to longer produce shelf-life of foods.

A company was registered, *Extended Shelf-Life Solutions, LLC*, in order to apply for a small business innovation research (SBIR) grant with the U.S. Department of Agriculture (USDA). A provisional patent application was also submitted for the solution and we hope to further the project with a U. S. Department of Agriculture grant.



For more information about us visit our website at [cmdd.ualr.edu](http://cmdd.ualr.edu) and like us on Facebook at [facebook.com/CMDDJAD](https://facebook.com/CMDDJAD)  
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