are expected to help in the future development of immunological therapy for the prevention of graft rejection and the elimination of cancer cells.

In addition to his post as researcher at the Institute of Molecular Biology, Dr. Lai is also an Adjunct Professor at Graduate Institute of Microbiology and Immunology, National Yang-Ming University, and an Adjunct Professor at Graduate Institute of Microbiology and Immunology, National Taiwan University. Miss Huey-Wen Hsiao, one of the two co-first authors, is a Ph.D. graduate student at Graduate Institute of Microbiology and Immunology, National Yang-Ming University and Dr. Wen-Hsien Liu, the second co-first author, is a Postdoctoral Fellow at Academia Sinica. The transgenic mouse and knockout mice used in this study were generated in the Academia Sinica Transgenic Mouse Core, with assistance from Dr. Si-Tse Jiang. This study is supported by an Academia Sinica Investigator Award, a National Science Council Frontier Research Grant, and the Institute of Molecular Biology, Academia Sinica.

**Insights Into the Development of Superior UVB Blocking Molecules**

A research team in Thailand has investigated the absorption and emission spectra of ultraviolet (UV) B blocking methoxy substituted cinnamates using the symmetry-adapted cluster configuration interaction method.

The finding, reported in The Journal of Chemical Physics, provides new insights toward the use of five different substituted positions using the symmetry-adapted cluster which included cis- and trans-isomers of ortho-, meta-, and para-monomethoxy substituted compounds and 2,4,5- ortho-, meta-, para- and 2,4,6- ortho-, para-trimethoxy substituted compounds. The calculated oscillator strengths of the trans-isomers were larger than the respective cis-isomers, which is in accordance with the experimental data.

Dr Supawadee Namuangruk, a researcher at Thailand’s National Nanotechnology Center (NANOTEC) Nanoscale Simulation Lab, said, “The calculations provide reliable results and a useful insight into the optical properties of these molecules, and therefore, provide a useful tool for developing UVB blocking compounds with regard to the tuning of the photoabsorption” “High absorbance, broad absorption peak with small fluorescence quantum yield, and low radiative rate are expected for superior UVB sunscreen. Non-radiative decay back to the initial ground state is also relevant. Therefore, the theoretical study of the relaxation process is important to design the superior UVB blocking molecules” said Dr Supawadee.

Collaborators on this investigation included Kasetsart University and the Institute for Molecular Science, Japan.

Dr Supawadee is currently working on a collaborative research with Ubon Rachathani University in Thailand on the development of efficient Dye Solar Cells (DSC) based on D-D-pi-A Organic Dyes.

**Gamma-Tocotrienol Kills Prostate Cancer Stem Cells**

Scientists from Singapore, Australia and Hong Kong have found that gamma-tocotrienol is potent in killing prostate cancer stem cells. This small group of cells is responsible for the initiation of prostate cancer and is resistant to conventional chemotherapy drugs. It causes relapses in the cancer by producing new chemo-resistant cancer cells. Gamma-tocotrienol is a member of the Vitamin E family and is derived naturally from palm oil.

This study is aimed to find a way to eradicate prostate cancer stem