

2017

Kinetic Studies of DNA Repair Enzyme ALKBH2

Michael R. Vittori


University of Rhode Island, michael_vittori@my.uri.edu

Creative Commons License



This work is licensed under a [Creative Commons Attribution-Noncommercial-Share Alike 3.0 License](https://creativecommons.org/licenses/by-nc-sa/3.0/).

Follow this and additional works at: <http://digitalcommons.uri.edu/srhonorsprog>

 Part of the [Amino Acids, Peptides, and Proteins Commons](#), [Enzymes and Coenzymes Commons](#), [Medical Biochemistry Commons](#), [Medical Molecular Biology Commons](#), and the [Medicinal and Pharmaceutical Chemistry Commons](#)

Recommended Citation

Vittori, Michael R., "Kinetic Studies of DNA Repair Enzyme ALKBH2" (2017). *Senior Honors Projects*. Paper 579.
<http://digitalcommons.uri.edu/srhonorsprog/579><http://digitalcommons.uri.edu/srhonorsprog/579>

This Article is brought to you for free and open access by the Honors Program at the University of Rhode Island at DigitalCommons@URI. It has been accepted for inclusion in Senior Honors Projects by an authorized administrator of DigitalCommons@URI. For more information, please contact digitalcommons@etal.uri.edu.

MICHAEL VITTORI (PharmD) Kinetic Studies of DNA Repair Enzyme ALKBH2

Sponsor: Deyu Li (Biomedical & Pharmaceutical Sciences)

The human ALKBH2 protein, an α -Ketoglutarate/Fe(II)-dependent dioxygenase, repairs alkylation damage in DNA through oxidative demethylation, with relative specificity for 1-methyladenine (m1A) and 3-methylcytosine (m3C) lesions. While several studies have already independently examined the factors associated with ALKBH2 enzyme functioning, a comprehensive analysis of these determinants has yet to be conducted. In this project we examined the factors that regulate ALKBH2 function. We evaluated the effects that varying concentrations of α -ketoglutarate, iron (II), and ascorbic acid have on the ability of ALKBH2 to correct m1A and m3C lesions in DNA. Additionally, we have determined the impact of pH and temperature on the catalytic repair of m1A and m3C lesions by ALKBH2. These findings will be the basis for future experimentation to further elucidate ALKBH2 functioning and its role in preventing the development of cancer.