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Biological effects of muons from cosmic rays originating from nearby supernova MICHAEL MURRAY, ADRIAN MELOTT, CHISTOPHER FISHER, University of Kansas — While it is nearly certain that nearby supernovae have affected life on Earth, a determination of the precise effects of these events is frustrated by the lack of certain key information. Indeed, although most cosmic ray primaries are stopped in the atmosphere, secondary particles have the potential to impact both terrestrial and marine life. Of particular interest are muons, which would contribute substantially to the flux associated with a supernova. However, since muons are not an important part of the impact of conventional terrestrial radiation sources, their effects on life have not been well characterized. This can be remedied by experimental studies of effects on DNA from muons produced in neutrino beams. These experiments will be the first serious measurements of muon effects on biological molecules. We also plan to clarify the important relation of damage rates to repair rates, leading toward future *in vivo* work. This will allow a more complete and accurate treatment of these hazards and a comparison with the biological stress resulting from radiation-initiated ozone depletion and solar UVB increase.

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