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Primary Research Interest:	Biology
Description of Research:	We have identified he common nutritional element inorganic phosphate as a potential mediator of chronic inflammation and bone loss. Chronic inflammation leads to numerous long-term health consequences including bone decay which often results in fracture. Veterans, in particular, are susceptible to chronic inflammation as Post-traumatic stress disorder (PTSD) and gulf war illness have recently been associated with low grade chronic inflammation. Fractures have serious health consequences including lengthy rehabilitation and may cause prolonged or permanent disability and almost always require hospitalization and major surgery. We have identified a novel approach to reducing inflammation associated with aging by regulating dietary Pi intake. Here we will investigate the preclinical relevance of such an approach as well as investigate the mechanism of action. Further, we will investigate the translationally important possibility dietary phosphate could be manipulated by either reducing dietary intake or through pharmacologic means (Pi-binders) to enhance fracture healing. Prevention of fractures will greatly reduce both the personal and financial burden to veterans relative to post-fracture treatment
Relevance to VA:	Fractures have serious health consequences including lengthy rehabilitation and the most serious, hip fractures, may cause prolonged or permanent disability and almost always require hospitalization and major surgery. A recent retrospective, secondary analysis of National Veterans Health Administration Medicare beneficiaries concluded that one in three elderly male veterans who sustain a hip fracture die within one year. Another retrospective study of 41,331 veterans determined that approximately 18.3% of hip fracture patients were readmitted within 30 days and of those 48.5% died within one year. Therefore, prevention of fractures would represent a significant health intervention, improving longevity as well as quality of life in the veteran population.