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赵建宁教授团队在《Autophagy》杂志发表科研新成果

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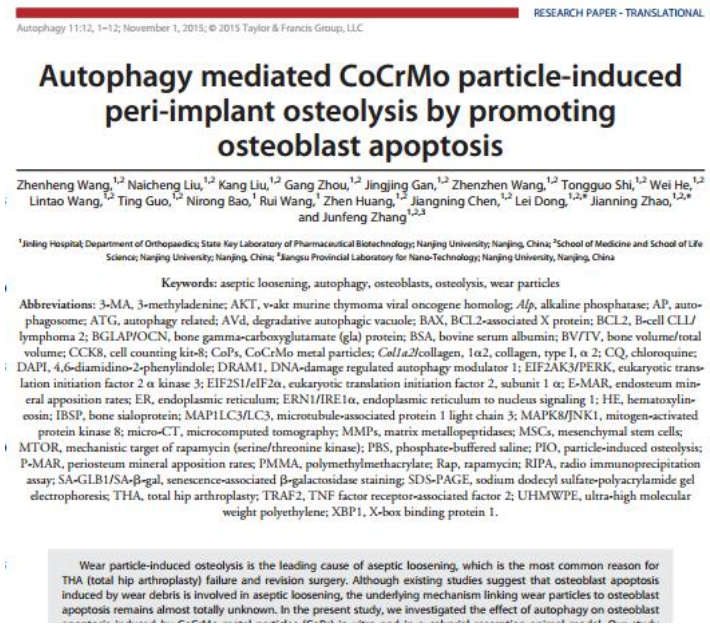
近期，南京大学医学院附属金陵医院、南京军区南京总医院骨科赵建宁教授带领的团队在人工关节无菌性松动机制研究方面取得重要发现。相关成果在线发表于《Autophagy》杂志上（影响因子11.753）。题目为：“Autophagy mediated CoCrMo particle-induced peri-implant osteolysis by promoting osteoblast apoptosis”。通讯作者为南京大学医学院附属金陵医院骨科主任赵建宁教授和南京大学董磊、张峻峰教授，南京大学医学院博士研究生王振恒为文章的第一作者。在这篇文章中，研究人员证实人工关节长期使用后产生的CoCrMo磨损微粒可以通过自噬促进成骨细胞的凋亡，从而参与人工关节无菌性松动的发生，下调自噬可以抑制骨溶解。这项研究从一个全新的角度阐明了人工关节无菌性松动的新机制，为这类疾病的治疗干预提供了新的靶点。



RESEARCH PAPER - TRANSLATIONAL

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Autophagy mediated CoCrMo particle-induced peri-implant osteolysis by promoting osteoblast apoptosis

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Keywords: aseptic loosening, autophagy, osteoblasts, osteolysis, wear particles

Abbreviations: 3-MA, 3-methyladenine; AKT, v-akt murine thymoma viral oncogene homolog; *Alp*, alkaline phosphatase; AP, autophagosome; ATG, autophagy related; AVd, degradative autophagic vacuole; BAX, BCL2-associated X protein; BCL2, B-cell CLL/lymphoma 2; BGLAP/OCN, bone gamma-carboxyglutamate (gla) protein; BSA, bovine serum albumin; BV/TV, bone volume/total volume; CCK8, cell counting kit-8; CoPs, CoCrMo metal particles; *Col1a2*/collagen, 1α2, collagen, type I, α 2; CQ, chloroquine; DAPI, 4,6-diamidino-2-phenylindole; DRAM1, DNA-damage regulated autophagy modulator 1; EIF2AK3/PERK, eukaryotic translation initiation factor 2 α kinase 3; EIF2S1/eIF2α, eukaryotic translation initiation factor 2, subunit 1 α; E-MAR, endosteum mineral apposition rates; ER, endoplasmic reticulum; ERN1/IRE1α, endoplasmic reticulum to nucleus signaling 1; HE, hematoxylin-eosin; IBSP, bone sialoprotein; MAP1LC3/LC3, microtubule-associated protein 1 light chain 3; MAPK8/JNK1, mitogen-activated protein kinase 8; micro-CT, microcomputed tomography; MMPs, matrix metallopeptidases; MSCs, mesenchymal stem cells; MTOR, mechanistic target of rapamycin (serine/threonine kinase); PBS, phosphate-buffered saline; PIO, particle-induced osteolysis; P-MAR, periosteum mineral apposition rates; PMMA, polymethylmethacrylate; Rap, rapamycin; RIPA, radio immunoprecipitation assay; SA-GLB1/SA-β-gal, senescence-associated β-galactosidase staining; SDS-PAGE, sodium dodecyl sulfate-polyacrylamide gel electrophoresis; THA, total hip arthroplasty; TRAF2, TNF factor receptor-associated factor 2; UHMWPE, ultra-high molecular weight polyethylene; XBP1, X-box binding protein 1.

Wear particle-induced osteolysis is the leading cause of aseptic loosening, which is the most common reason for THA (total hip arthroplasty) failure and revision surgery. Although existing studies suggest that osteoblast apoptosis induced by wear debris is involved in aseptic loosening, the underlying mechanism linking wear particles to osteoblast apoptosis remains almost totally unknown. In the present study, we investigated the effect of autophagy on osteoblast

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