

**P051** Proteasome regulation by amp-activated protein kinase  
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AMP-activated protein kinase (AMPK) is a heterotrimeric complex composed of a catalytic  $\alpha$  subunit and two  $\beta$  and  $\gamma$  regulatory subunits. It is a eukaryotic evolutionary conserved metabolic sensor that has a central role controlling energy homeostasis. In a previous work we noted that AICAR and Metformin, two specific activators of AMPK, worked as proteasome inhibitory agents and proposed an inhibitor role of AMPK on proteasome activity. Proteasome 26S is a proteolytic multisubunit complex composed of a catalytic core of 20S and two regulatory particles of 19S. In the 19S complex, two subcomplexes can be defined, the Lid and the Base. In this work we show that both the  $\alpha$  and the  $\beta$  subunits of AMPK are able to interact physically with a subunit of the Lid of the 19S regulatory particle of the proteasome, named PSMD11. In addition, AMPK was able to phosphorylate in vitro purified PSMD11 obtained in bacteria. We also found that activation of AMPK, using AICAR or a constitutively active form of the AMPK $\alpha$  subunit (T172D), induced the in vivo phosphorylation of PSMD11. All these data suggest that AMPK could regulate proteasome activity by modulating the phosphorylation status of PSMD11, a non-ATPase subunit from the Lid.