

## Description for the general public (EN)

Ansamycin antibiotics are a group of natural compounds that exhibit biological activity (antibacterial, antiviral and antitumor). One of the representatives of the benzenoid ansamycins is geldanamycin (**GDM**) (Fig. 1). The anticancer activity of **GDM** results from the inhibition of the activity of heat shock proteins (Hsp90). Hsp acts as chaperones responsible for the proper folding of other proteins, their oligomerization, translocation and degradation. The main issue with the medical usage of **GDM** is toxicity, low solubility which lead to limited bioavailability and general chemical instability (red-ox reactions). Another representative of benzenoid ansamycins is macbecin II with a reduced quinone system, and in low toxicity in healthy cells lines, compared to **GDM**. Hence the conversion of the quinone moiety of **GDM** into the benzo[*d*]oxazole group (Fig. 1), which is not susceptible to red-ox reactions in cells, is essential for achieving best balance between decreased toxicity and high anticancer activity. Therefore, the key task of this project will be modification of the quinone system within benzenoid ansamycins *via* heterocyclization (formation of benzo[*d*]oxazole), Heck reaction or Huisgen 1,4-dipolar cycloaddition (Fig. 1), which will result in chemical stability and whose presence contribute to selective and effective binding with the molecular target in cells.

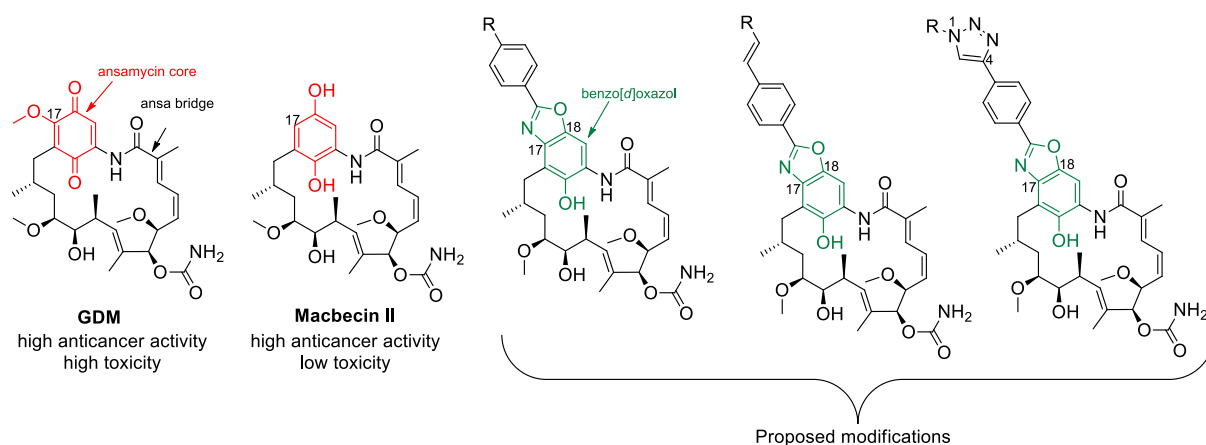


Figure 1. Benzenoid ansamycins and proposed functionalization of their core.