Faldaprevir is an HCV Protease Inhibitor for the treatment of Hepatitis C infection. The first small molecule treatment for HCV, the macrocycle BILN 2061, was the predecessor of Faldaprevir. Human clinical isolates following administration of Faldaprevir were found to contain four major human metabolites. Elucidation of the structure of each of these metabolites was achieved through a combination of isotopic labelling, LC-NMR, HPLC-MS, global esterification/chromatography and total synthesis. Implications for the molecular-level interactions of the drug in the Cyp-3A4 active site will also be discussed.