

**PROJECT TITLE: Environmental Toxins and Liver Health: Association between Per- and Polyfluoroalkyl Substances (PFAS) and Liver Cancer Risk**

**SCIENTIFIC ABSTRACT**

Liver cancer incidence has *increased 3-fold* since the early 1980s and is the fastest growing cancer in the US. Underlying causes likely include environmental toxins. Among them, on *daily* basis, the American people are exposed to a group of chemicals called “per- and polyfluoroalkyl substances”, also known as PFAS, which can be found in foods, drinking water, household products, and workplace. Increasing evidence supports that exposure to PFAS can lead to adverse health effects. PFAS cause liver cancer in animals, and small-scale occupational study showed that workers exposed to PFAS experienced significant higher risk of liver cancer death. However, it remains unknown the extent to which exposure to PFAS in the general population impacts liver cancer risk. Hence, we propose the current study to answer this question. Our proposal is built upon our recent research, in which we found that (1) higher circulating levels of PFAS were associated with a higher risk of diabetes, a strong risk factor for liver cancer; and (2) plasma levels of PFAS are highly stable, reproducible, and comparable to those in the general US population. In this pilot project, we propose to further investigate PFAS—liver cancer associations in the general US population. We expect that this pilot study will lead to large-scale investigations on PFAS and liver cancer in diverse ethnic populations. Collectively, research findings can inform new avenues for primary prevention of liver cancer and provide useful data to regulatory agencies and policymakers who will use the information to protect public health. Findings will be disseminated to scholarly audience and the general public to advance current understanding of liver cancer etiology and prevention as well as inspire public environmental concerns and efforts to limit or remove the production and consumption of products made or contaminated with PFAS and other environmental toxins.