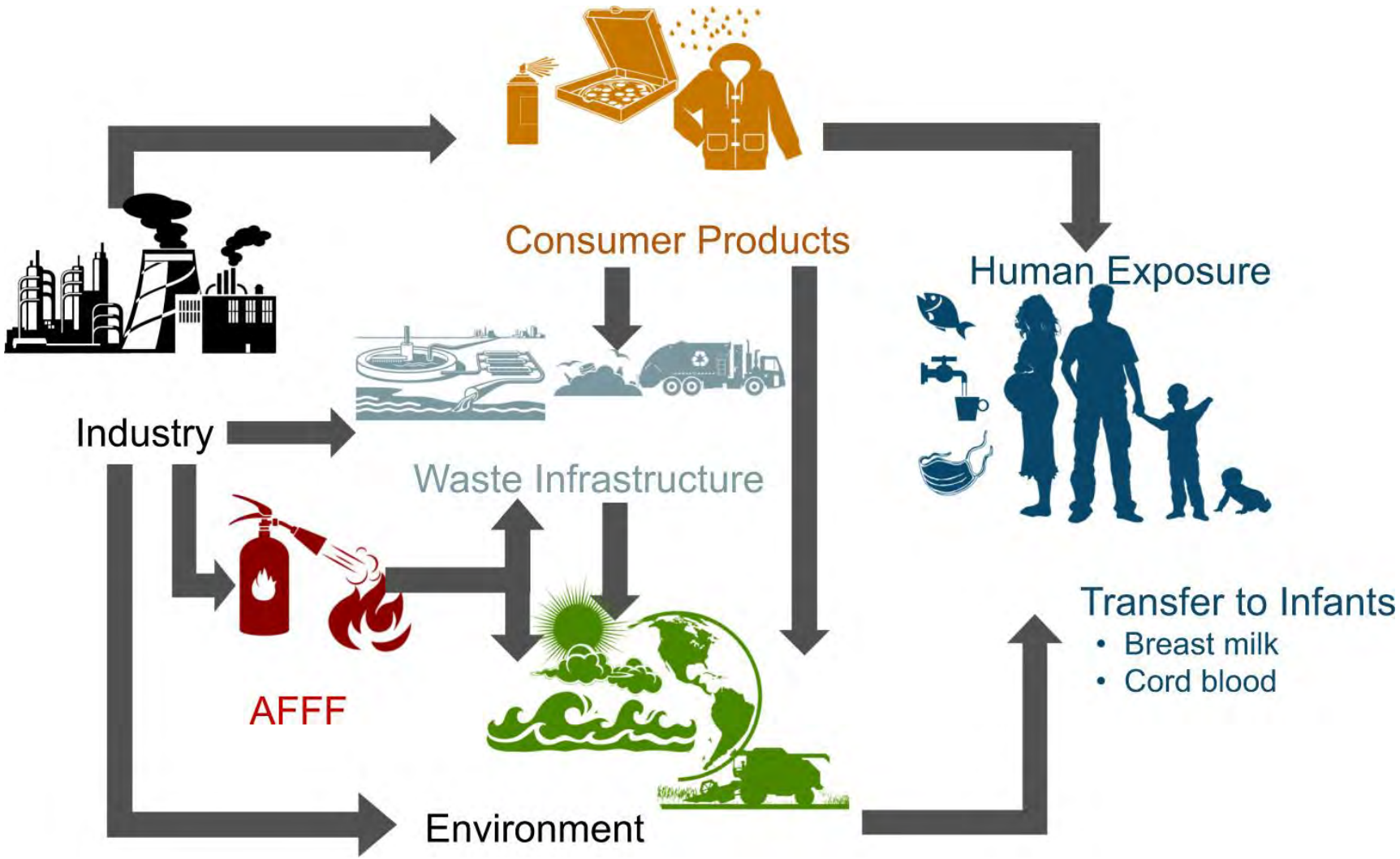
STEEP
Sources, Transport, Exposure & Effects of PFASs
UNIVERSITY OF RHODE ISLAND SUPERFUND RESEARCH PROGRAM

THE UNIVERSITY OF RHODE ISLAND
COLLEGE OF PHARMACY

How Do PFAS Cause Disease?

Alicia Crisalli

PFAS Exposure Sources



J. Expo. Environ. Epidemiol. **2019**, 29, 131-147.

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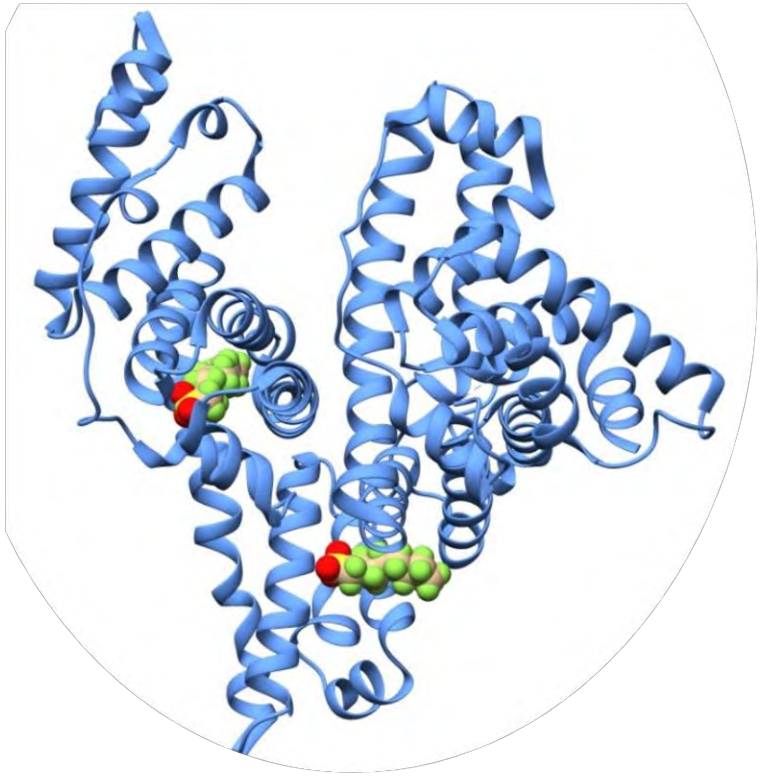
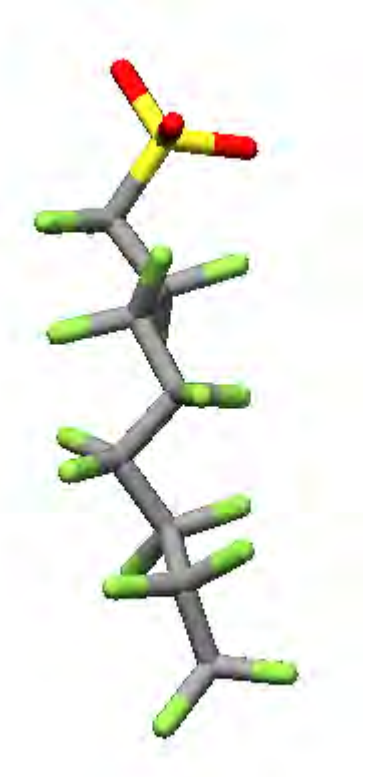
Protein Binding



Serum albumin (HSA) – transport of fatty acids, drugs, and metabolites



PFOS – “legacy” PFAS with 8 carbons

Transthyretin (TTR) – main thyroxine (T4) carrier

Chem. Res. Toxicol. ***2012****, 25, 990-992.*
Environ. Sci. Technol. **2016**, 50, 11984-11993.

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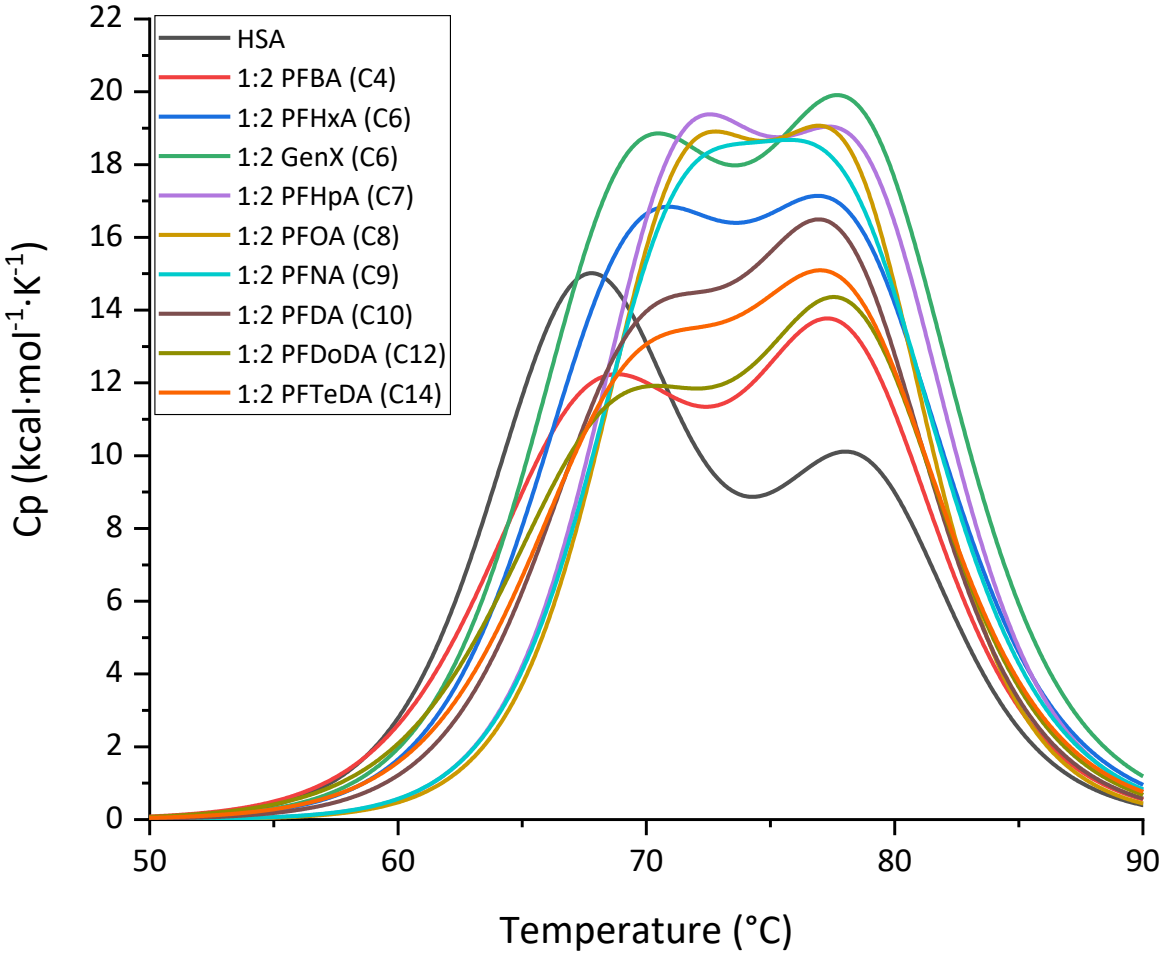
Protein Research Questions

- How strongly do PFAS bind to proteins?

- How does the binding between proteins and PFAS relate to known human health effects of PFAS exposure?

Protein Binding Results & Conclusions



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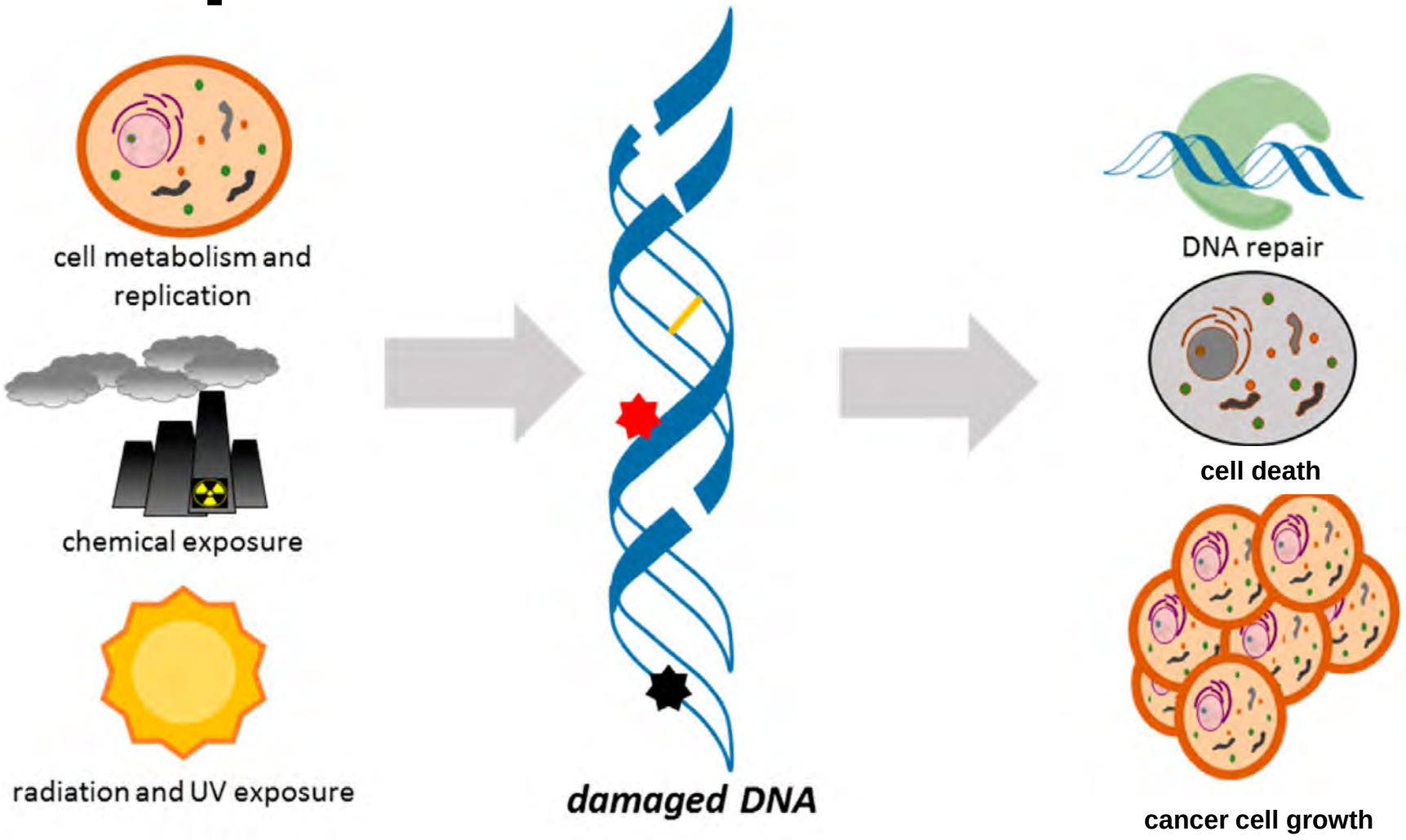
DNA Repair



Int. J. Mol. Sci. **2017**, *18*, 2212.

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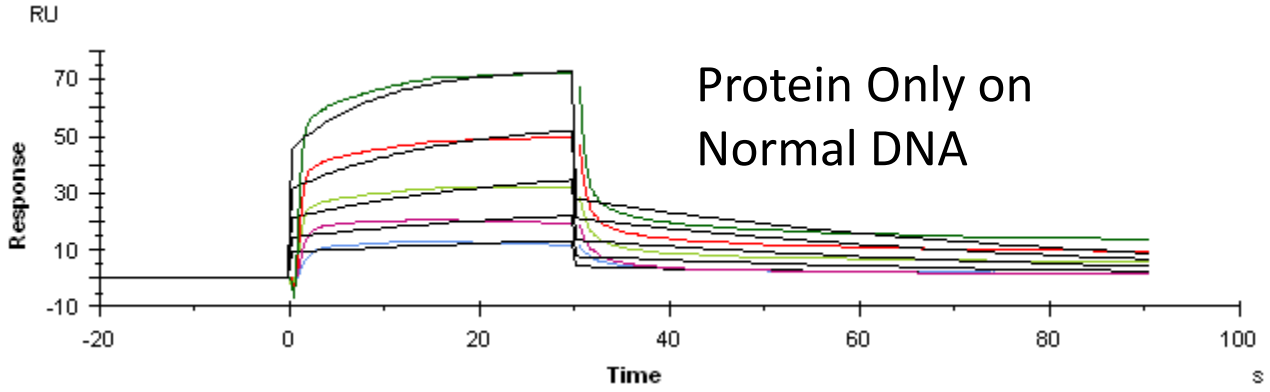
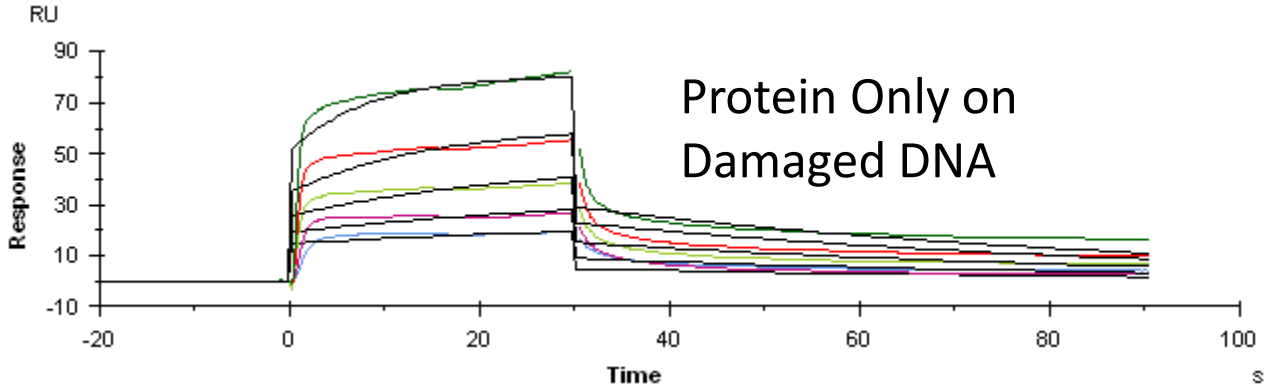
DNA Research Questions

- Do PFAS interact with DNA repair proteins?
- Do PFAS increase or decrease the binding between repair proteins and damaged DNA?
- Does the change in binding affect DNA repair?

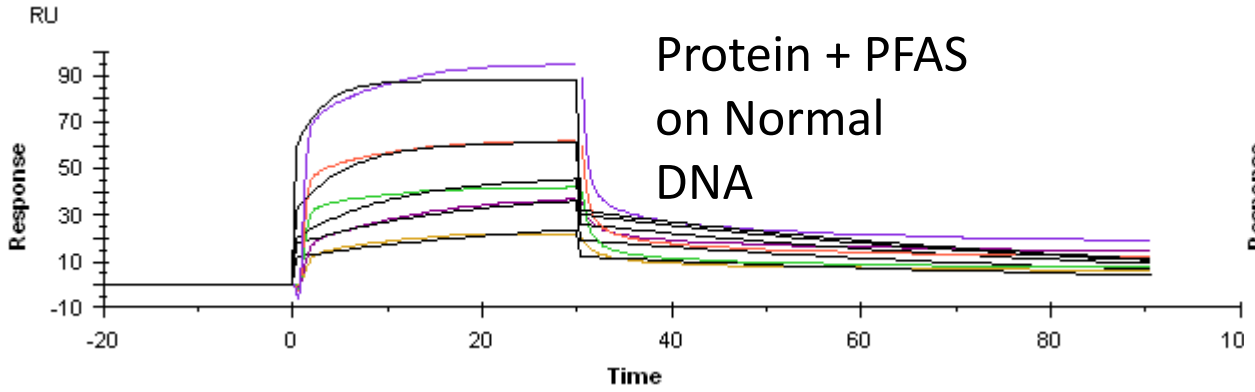
DNA Repair Results & Conclusions



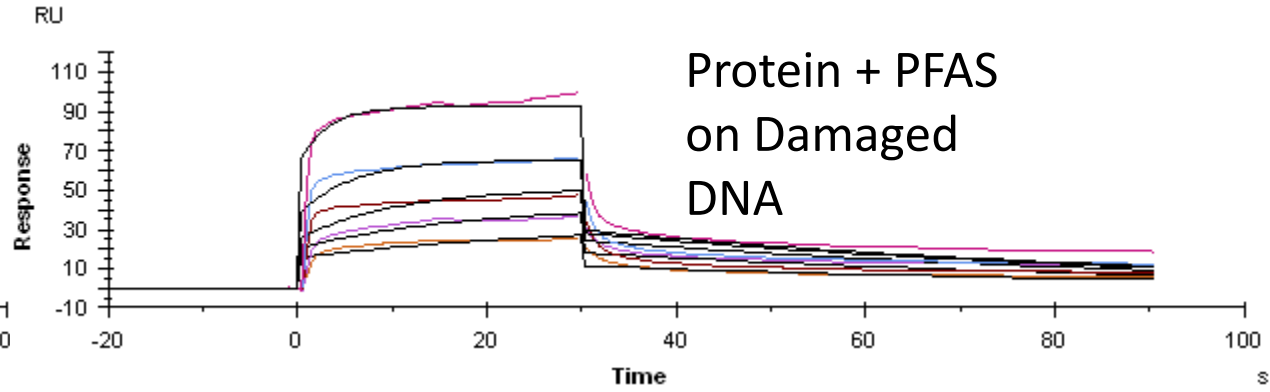
Protein Only on Normal DNA



Protein Only on Damaged DNA



Protein + PFAS on Normal DNA



Protein + PFAS on Damaged DNA

74% STRONGER binding to Normal DNA with PFAS

68% STRONGER binding to Damaged DNA with PFAS

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Department of Environmental Health

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Researching the Environment and Women's Health

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Superfund Research Program

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More information about STEEP is available at: https://web.uri.edu/steep/

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