



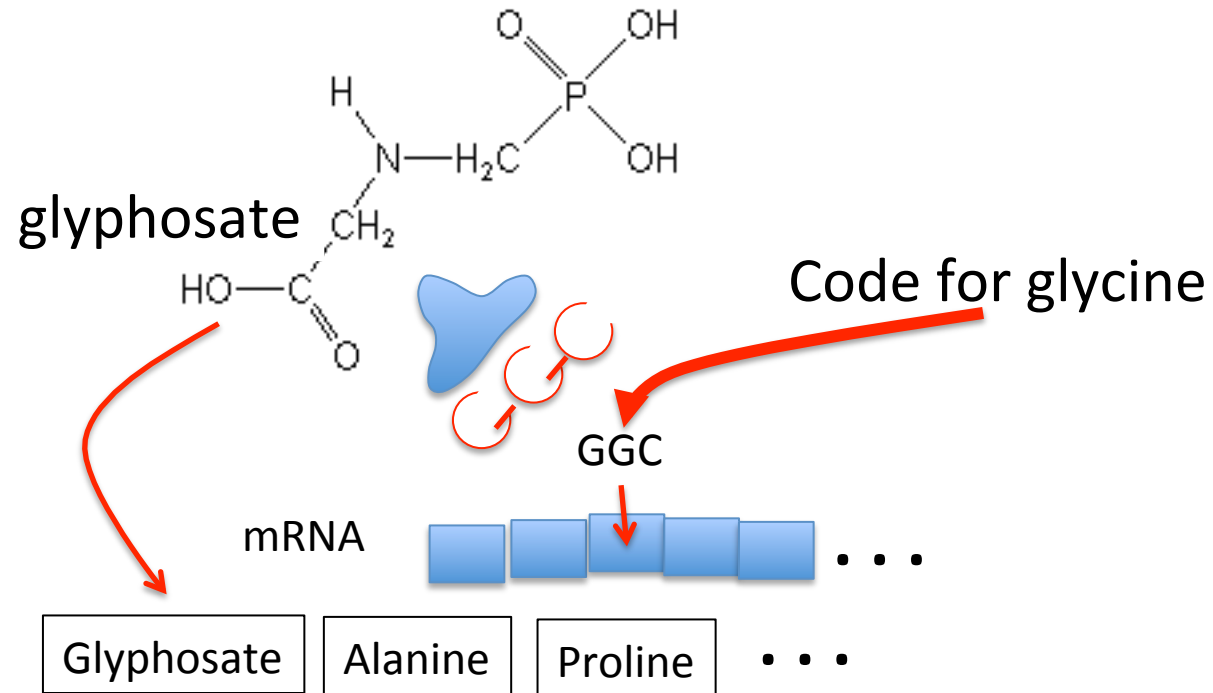
# Glyphosate as Glycine Analogue: Explaining Zika & Microcephaly

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U.S. Congressional Hearing

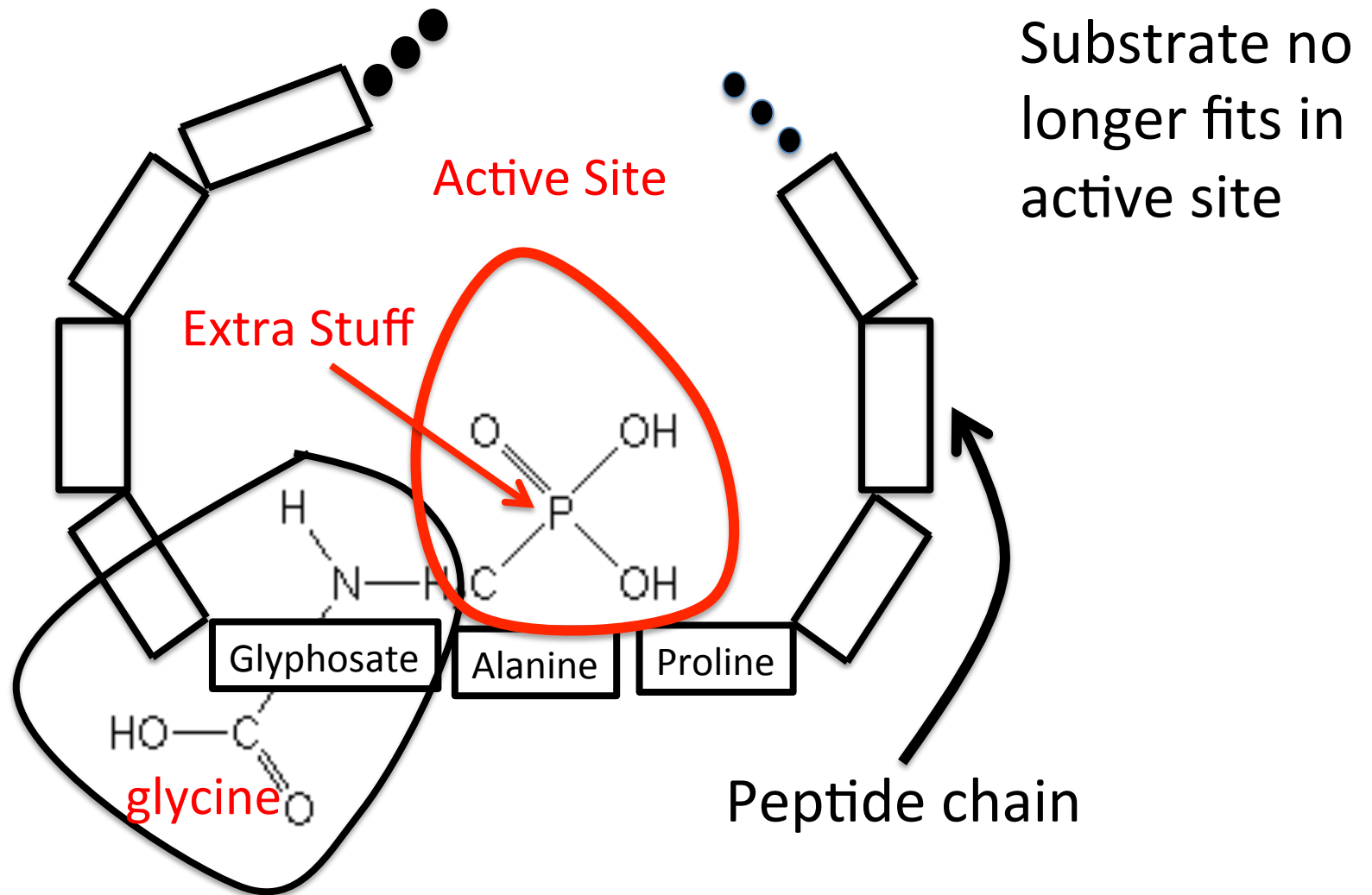
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# What If Glyphosate Could Insert Itself Into Protein Synthesis???

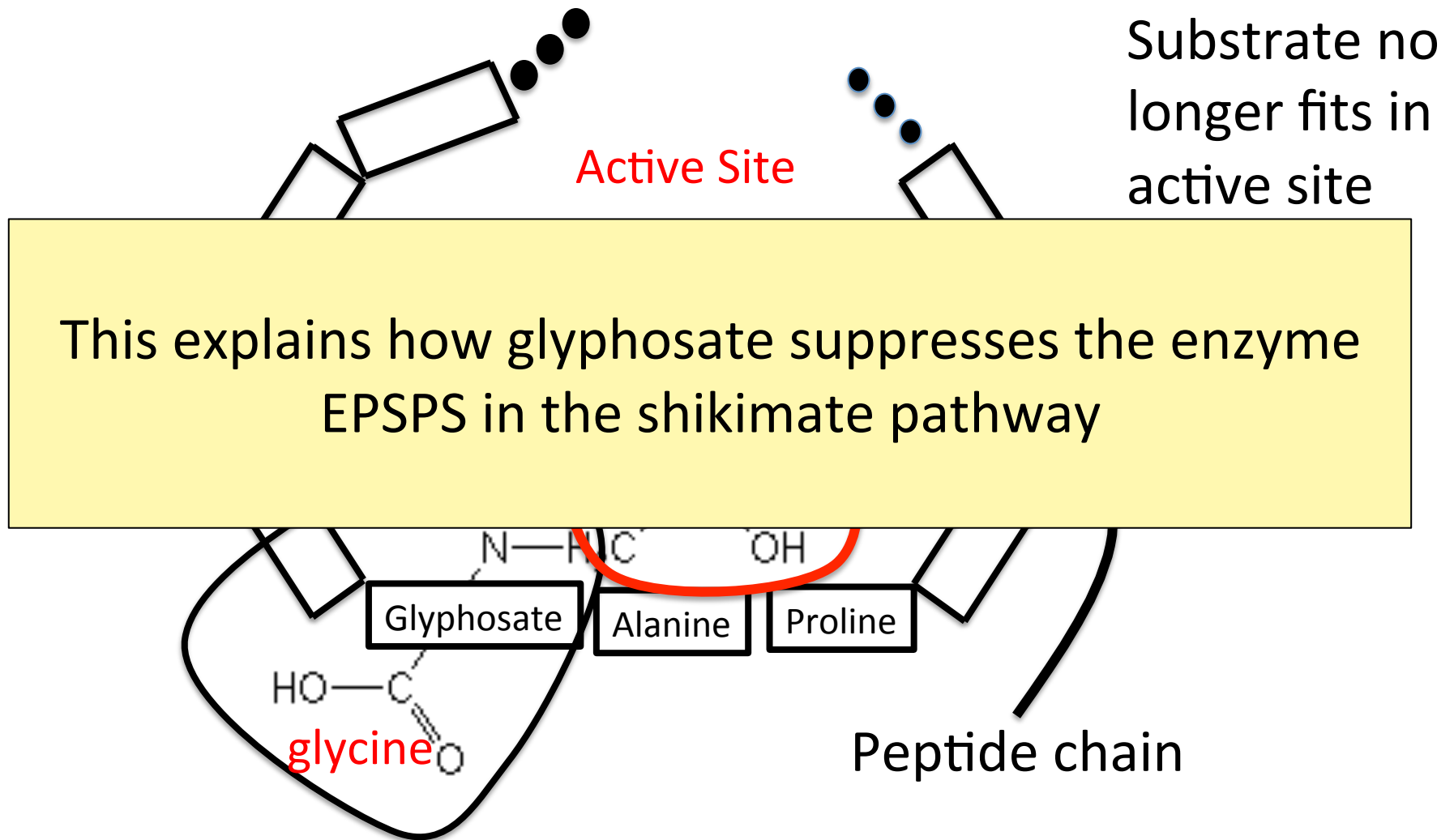


Any proteins with conserved glycine residues are likely to be affected in a major way

# Extra Piece Sticks Out at Active Site



# Extra Piece Sticks Out at Active Site



# Vulnerable Proteins: Resulting Pathologies

Conserved Glycines	Disease Profile
Hormone-sensitive Lipase	Obesity
Insulin Receptor	Diabetes
Amyloid Beta Plaque	Alzheimer's Disease
OGG1	DNA Damage → Cancer
Lipocalin	Kidney Failure
ACTH	Adrenal Insufficiency
Cytochrome C Oxidase	Mitochondrial Disease
Alpha Synuclein	Parkinson's Disease
TDP-43	ALS

# Vulnerable Proteins: Resulting Pathologies

Conserved Glycines	Disease Profile
Hormone-sensitive Lipase	Obesity

Glyphosate insertion by mistake in place of glycine during protein synthesis can easily explain the alarming correlations between glyphosate usage on core crops and a long list of debilitating chronic diseases

Cytochrome C Oxidase	Mitochondrial Disease
Alpha Synuclein	Parkinson's Disease
TDP-43	ALS

# Zika and Molecular Mimicry

Studies from the Vaccine Induced Immunological Damage (VIID) Program

Zika E Protein: GWGNGCGLFGKGS LV

Immunoglobulin heavy chain: GYSSGCGYW GQG TLV

- Lots of glycines! – These could get displaced by glyphosate during protein synthesis!!
- Likely to disrupt protein folding and cause resistance to breakdown
  - Autoimmune reaction to similar protein (immunoglobulin heavy chain) due to molecular mimicry

# GMO Mosquito\*

- Grown in contained spaces in Cayman Islands
  - Fed sucrose as larvae followed by blood as adults (sucrose comes from sugar beets or sugar cane)
- Males engineered to become infertile without access to tetracycline
- They could be harboring more glyphosate than mosquitoes in the wild



\*AF Harris et al., Nature Biotechnology 2011; 29:1034-1037.



# GMO Mosquito\*

- Grown in contained spaces in Cayman Islands

A Zika virus growing in a GMO mosquito is likely to end up with glyphosate in its proteins

- They could be harboring more glyphosate than mosquitoes in the wild



\*AF Harris et al., Nature Biotechnology 2011; 29:1034-1037.

Very low levels of immunoglobulins are linked to a condition that includes immune deficiency, neurological abnormalities, failure to thrive and microcephaly\*

\*ME Conley et al., Blood 1986;67(5):1251-1256.