

## Bacterial Development and Pathogenesis (Spring 2001)

### Attributes of Signal Systems of *Myxococcus xanthus*

Signal System	Nature	Tool
A Signal	{Tyr, Pro, Phe, Leu, Trp} = 1/2 of signal activity. Cys inhibits fruiting. Rest from peptides	Rescued by {aa}. Darker tan than E <sup>-</sup> Measure aa output.
B signal	BsgA affects early development Encodes intracellular protease Some rescued by murein components	Alters motility in presence of wt: build ridge on edge of colony.
C Signal	Affects ripples. Rescued by peptidoglycan components: N-acetylglucosamine (NAG), N-acetylmuramic acid (NAM), diaminopimelic acid, D-alanine. {all four} = murein to get fruiting NAG only one effective for rippling Each individual works for fruiting, but not as well as { }	Rescue of fruiting by { } Rescue of rippling by { } Absence of rippling
D Signal	Essential, IF3	Compact, darker tan than E <sup>-</sup>
E Signal	Light tan on sporulation medium Complementation requires cell-cell contact EsgA = branched chain ketoacid (BCKA) dehydrogenase. BCKA and not BCAA rescue. Branched chain fatty acids (from BCKA) prior to sporulation required. Signal = BCFA? Or modify signal	{Leu, Ile, Val} increase vegetative growth in wt, not Esg <sup>-</sup> (inhibit) Light tan on sporulation medium (measurable by absorbance A <sub>384</sub> ) disappears w/+isovaleric acid Isovaleric acid restores fruiting? Measure DH activity

You have the following unknown strains:

MXR1, MXR2, MXR5, MXR7	All resistant to the antibiotic kanamycin
MXR4, MXR8	Both resistant to the antibiotic oxytetracycline
MXR3, MXR6	Both sensitive to both antibiotics

In addition, you have a strain known to be DK101.

On Wednesday, you will have the strains grown up in liquid rich medium. You'll have available plates made of CTT (rich medium) and those made of TPM medium, used to induce fruiting. Any L-amino acid you want will be available (as solid) as well as diaminopimelic acid and isovaleric acid. N-acetylglucosamine, N-acetylmuramic acid, and D-alanine have been ordered and should arrive in several days. If you want anything else, tell me.

