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JOANNE STUBBE: Hi, everybody. You're in 507, and if you look at your syllabus, you'll find one of the things in the front page of your syllabus is called a lexicon. And I'd like to introduce you to why we've chosen to have a lexicon for this course.

So if you look at this particular slide or overhead, this is what John is going to teach you this semester-- introductory metabolism. The glycolysis pathway, fatty acid biosynthesis, fatty acid oxidation, amino acid metabolism. A complete jungle. How are we ever going to learn anything out of this mess?

Well, that's actually exactly the point. So what we're going to do over the course of the semester is convince you that all of this mess can be simplified to 10 basic reactions. And those 10 basic reactions are what's in the lexicon.

So it turns out all of biochemistry for primary metabolism can be described using 10 different sets of reactions and your vitamin bottle. And so if you look at your vitamin bottle, what do you see? Most of you probably take vitamins. You have vitamin B1, vitamin B2, vitamin B3, vitamin B6, vitamin B12. All of those provide enzymes the catalysts for all the reactions in this complex metabolic pathway I showed you on the previous slide.

They expand the repertoire of reactions that enzymes can actually catalyze. And so within the lexicon, what we're going to show you is the chemistry of actually how these vitamins work.

So again, if we come back to the lexicon, we'll talk about how carbon-carbon bonds are made and broken, fatty acid metabolism, sugar metabolism. We'll talk about oxidation reduction reactions and the vitamins that are used for that transformation. We'll talk about the energy storage and the energy currency in the cell-- ATP, etc. So what the lexicon is meant to do is be an aid when you can't remember what does oxidation and reduction?

You can go back to your lexicon and look up what are the redox cofactors that are involved in transformation. And by practicing the chemistry in the first part of the semester of all these

reactions, metabolism should be very straightforward in terms of all the connectivities. So hopefully what you will do is look through your lexicon tonight, see what these reactions are, and then keep it by your side during the rest of the semester.

And when you're having trouble understanding some chemical transformation, you can use the lexicon as a guide to think about the chemical transformations that you'll be looking at over the course of the semester.