

A Faculty Exchange Program to Strengthen Collaborations in the Classroom

Lauren Hynicka, PharmD, BCPS,
Steven Fletcher, PhD,
Lisa Lebovitz, JD

University of Maryland School of Pharmacy

Overview

A P1 Fall course at the University of Maryland School of Pharmacy, entitled General Patient Management (GPM), was purposefully designed by faculty members Dr. Hynicka, a pharmacist, and Dr. Fletcher, a basic scientist, to introduce new pharmacy students to the clinical thought process of patient diagnosis and treatment. GPM was constructed to provide a general approach to the collection and assessment of patient subjective and objective data, built on a firm foundation of clinical chemistry, using the Pharmacists' Patient Care Process (PPCP).

To familiarize themselves with their different perspectives and approaches to the subject matter, the co-course managers spent time in each other's laboratory or clinical practice site. Shadowing Dr. Fletcher in the lab reinforced Dr. Hynicka's respect of the role of basic science in pharmacy, and re-energized her passion for chemistry. Rounding with Dr. Hynicka gave Dr. Fletcher insight into the applicability of medicinal chemistry concepts to pharmacy practice, leading him to tailor his teaching to those relevant principles. Both experiences deepened their mutual appreciation and helped them to mold the course into one that successfully bridges the basic sciences with pharmacy practice.

Collaboration in the Practice

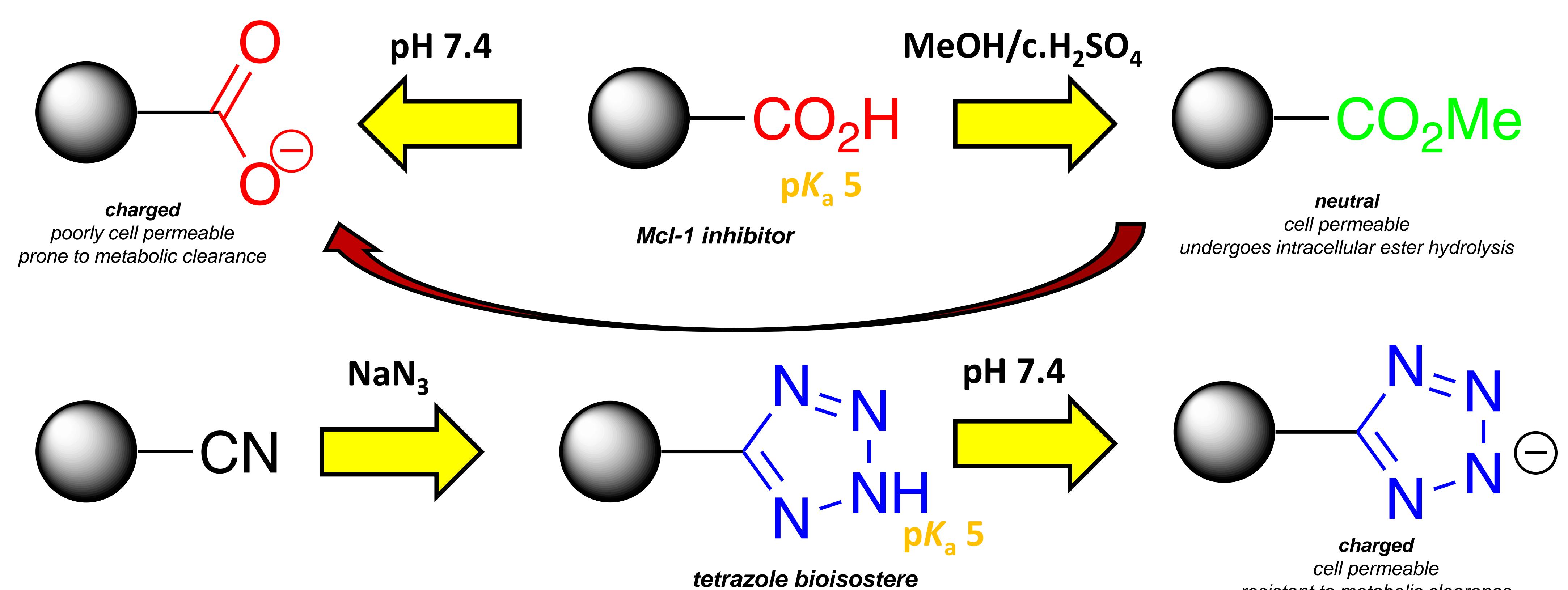
Dr. Hynicka is trained in adult internal medicine. To help Dr. Fletcher better understand the role of a clinical pharmacist he attended rounds for an adult internal medicine team at the University of Maryland Medical Center. In addition to attending rounds, Dr. Hynicka had a pharmacy student on rotation allowing him to experience precepting a fourth year pharmacy student on their APPES. After rounds, Dr. Hynicka took Dr. Fletcher to interview several patients to further engage him in the patient care process.

Dr. Fletcher comes from a basic sciences background where his training was in (four) traditional chemistry departments. Dr. Fletcher recalls that in his early years teaching in the Pharm.D. curriculum, "I taught medicinal chemistry like I was teaching organic chemists rather than pharmacists. The experience doing rounds with Lauren gave me a first-hand insight into pharmacy and now when I teach medicinal chemistry to pharmacists, I often think back to that experience and I tailor my lecture-style more towards pharmacy, and focus more on mechanism of action, metabolism, drug-drug interactions and dosage than on drug synthesis, for example. In this way, I'm a far better educator of pharmacy students than I perhaps otherwise would have been had it not been for the development of GPM and my exposure to pharmacy practice."

Collaboration in the Lab

One of Dr. Fletcher's research goals is to inhibit the oncprotein myeloid cell leukemia-1, or Mcl-1. Mcl-1's pro-survival function is tightly regulated by opposing pro-death BH3 proteins that engage Mcl-1 through a hydrophobic groove and a crucial salt bridge interaction with Arg263. Accordingly, towards the inhibition of Mcl-1, Dr. Fletcher's group has developed hydrophobic small-molecules that carry a carboxylic acid to capture similar interactions with the protein.

While in Dr. Fletcher's laboratory, Dr. Hynicka prepared a methyl ester pro-drug of a lead inhibitor and a tetrazole-based bioisostere.[\(REF\)](#) This experience exposed Dr. Hynicka to a range of concepts, including pKa, membrane permeability, metabolism, lipophilicity and aromaticity. Dr. Hynicka's enthusiasm for medicinal chemistry was strengthened by this experience.



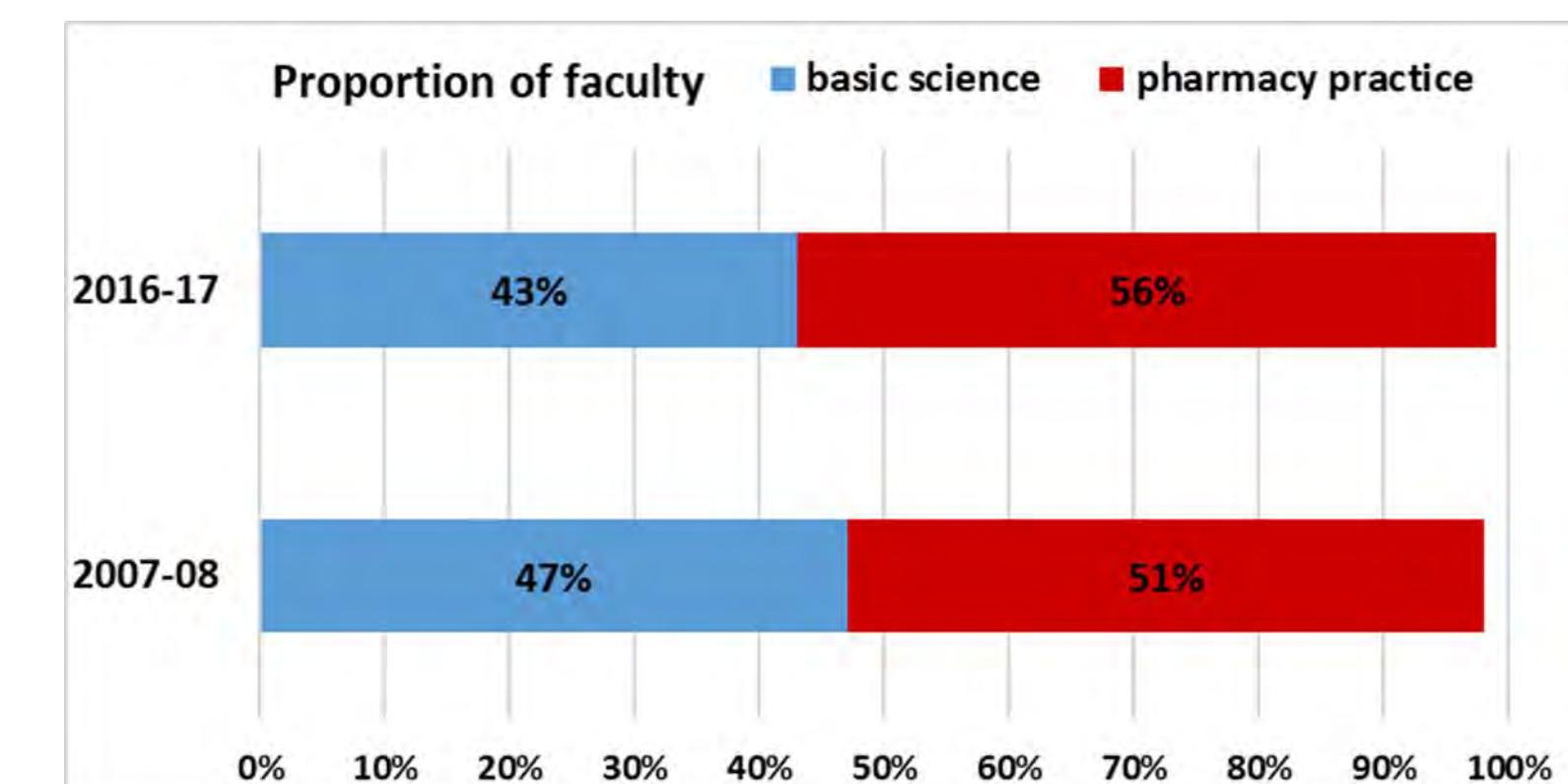
Structure-based design of N-substituted 1-hydroxy-4-sulfamoyl-2-naphthoates as selective inhibitors of the Mcl-1 oncprotein Eur J Med Chem. 2016 May 4;113:273-92. Lanning ME1, Yu W1, Yap JL1, Chauhan J1, Chen L1, Whiting E2, Pidugu LS3, Atkinson T4, Bailey H5, Li W4, Roth BM3, Hynicka K7, Chesko K7, Toth EA8, Shapiro P7, MacKerell AD Jr7, Wilder PT8, Fletcher S9.

Discussion

According to 2017 AACP Curriculum Quality Surveys, the opinions of graduating students and preceptors are very positive, with 97% of both groups agreeing /strongly agreeing that *the PharmD curriculum prepares students to apply knowledge from the foundational pharmaceutical and biomedical sciences to the provision of patient care*.

Perception of faculty is slightly less positive with 89% agreeing /strongly agreeing that *curricular collaboration among disciplines is encouraged at their college/school*, and 89% agreeing /strongly agreeing that *the curriculum is taught at a depth that supports understanding of central concepts and principles*.

AACP Profile of Pharmacy Faculty: Distribution between basic science and pharmacy practice disciplines has been relatively unchanged over the last ten years.



High stakes examinations (i.e. PCOA and NAPLEX) require students to have a strong basic science foundation and clinical aptitude. By bridging the gap between basic and clinical science early in the PharmD curriculum, Drs. Fletcher and Hynicka hope that students will realize the connections that are essential to strong academic and professional performance.

Perhaps one of the toughest but most important concepts for students to leave pharmacy school with is the need to be a life long learner. Having a strong understanding of the connection between the basic science and clinical science will allow them to understand and apply concepts to their practice as new medications are developed.

After this experience, Dr. Fletcher and Hynicka designed the cases in their course to be facilitated together by a basic science faculty member and clinical faculty member. This faculty exchange program can improve professional relationships across departments, for the benefit of both the students and the school community.