announced that Genentech has partnered with Lodo Therapeutics, a company formed by Sean Brady with the aim of further expanding the possibilities of this type of "isolated genomics studies."

14.8.5 New Sources (and Old Ones?) for Investigation

What is of significance is that almost all of the work reported above on BGC analyses and expression deal with products from Gram-positive organisms (mainly from the actinomycetales). However, as mentioned by the Challis group in an excellent recent review in *Natural Product Reports*, Gram-negative organisms also produce bioactive secondary metabolites, so this major group of organisms should not be forgotten (Masschelein et al. 2017). To add to this, it is usually forgotten that fungi are also very prolific producers of bioactive metabolites because cephalosporins were isolated from fungi. In 2017, the Keller group at Wisconsin published an excellent review demonstrating a "scalable platform" to identify fungal secondary metabolites and their gene clusters. This is a paper that should definitely be read (Clevenger et al. 2017).

In addition, it would be remiss to ignore the very interesting work that has been performed over the years by the Cichewicz group in Oklahoma, investigating molecules produced by organisms from "strange places" (Motley et al. 2017). Currently the group has over 5000 fungi collected and fermented together with a significant number of novel compounds that are actively investigated. A substantial number are direct isolation, but some are from use of epigenetic modifiers.

14.8.6 "Baiting" for Microbes

So what is meant by this phrase? A technique used in working with fungi and some other microbes is to effectively establish a procedure that permits microbes that are present, usually in soils and muds, to create colonies that can then be seen. These are quite different from the "as yet uncultivatable" microbes that require isolation of a single cell, followed by expression of the total genome from that one microbe (including some that will never be isolated as free microbes). Further information on the latter sources was presented by Newman in a recent review (Newman 2018).

However, the major recent discovery was that of the peptide texiobactin (**60**) reported by the Lewis group in 2015 (Ling et al. 2015). They devised a technique that was a variation on earlier "baiting techniques," such as the single cell fermentation systems used by "One Cell" and then by Diversa in the mid-1990s. This was brought up to date using miniaturization systems, and their system is now known as the "iChip." Using their system, they obtained from a previously unknown soil microbe, the peptide known as texiobactin (**60**). As of early January 2019, their original paper has over 750 citations in the Scopus database and has effectively generated "an industry" in synthesizing variations on the