In this second module, I'm going to go through some specific examples. These are representative of what's out there in the scientific literature. There are also examples of what not to do. I want to start my slides with a disclaimer. I pick up snippets, sentences, paragraphs from various things I read, sometimes my students work, sometimes the scientific literature, and I'm often critiquing that writing. So I tend to omit exact citations from my slides, just so that it doesn't appear that I'm critiquing any particular author. Really, these examples just typify what's out there in the scientific literature.

I want to start with a sentence that I was reading in an article in the Journal of Clinical Ecology. This is one of the top cancer journals, and this was the first sentence of the introduction section. This is when the authors are supposed to be drawing you into their paper. And it reads, adoptive cell Transfer Immunotherapy is based on the ex vivo selection of tumor reactive lymphocytes and their activation, and numerical expression before reinfusion to the autologous tumor bearing host. Now, I have a background in biology, and I still find this sentence hard to read. I have to struggle to get through it, and that's a shame, because if your reader has to struggle to get through your sentences, they may not finish reading your paper, they certainly aren't going to understand your ideas.

So ask yourself the question: is the sentence easy to understand? I don't think it is. Is the sentence enjoyable and interesting to read? No, it's not enjoyable when you have to struggle just to get through it. And really, the scientific literature should be enjoyable and interesting to read.

All right, here's another fun example. This was from a paper I was reading from the Journal of Photochemistry and Photobiology. It was actually an interesting article that had some practical implications about the way that we apply sunscreen. And so I was trying to write about it for a very general audience. I was reading along in the article. And then I get to this sentence it. These findings imply that the rates of a sorbate radical production and its recycling via dehydroascorbate reductors to replenish the ascorbate pool, are equivalent at the lower Iranians, but not equivalent at higher irradiance, with the rate of sorbate radical production exceeding its recycling back to a sorbate. All right, you can see that this sentence is incredibly difficult to read. Even if you had a strong background in chemistry, it's still very difficult to understand.

So you can want to ask yourself, is this sentence readable? I don't think it's very readable. Is it written to inform or to obscure? And I ask this question because sometimes when I'm reading the scientific literature, I wonder if the authors are being intentionally obscure, intentionally obtuse, if they're intentionally trying to obscure their material in the hopes that if nobody understands it, then nobody can poke holes in their research. Certainly, we don't want to be doing that. Certainly, the point of scientific writing is to inform.

I'm going to point out one feature that's common to both of these two passages that I just showed you. In both of those examples, they took some nice, spunky verbs and turned them into clunky noun This is incredibly common in academic writing, but it makes the writing hard to read, because verbs drive sentences, whereas nouns slow them down. In that first example, we have selection, activation, expression and reinfusion. Those are all nouns that are dragging the sentence down, but they could have been verbs, select, activate, express and reinfuse.

We have the same problem in the second sentence. We get production and recycling, which are nouns that could have been verbs, to produce to recycle. Writing with verbs is actually something we're going to spend a lot of time on next week in our unit on verbs.

So I took that second sentence and I tried to translate it into something understandable. Here's what I came up with. These findings imply that at lower radiation, ascorbate, radicals are produced and recycled at the same rate. But at higher radiation, they are produced faster than they can be recycled back to a scorpion. It's not the most exciting sentence ever, but I think it's at least understandable. Now you can get the gist of what the authors are trying to say. Notice what I did here is I stripped a lot of extra words from that sentence. I've got it down to about half the size of the original, and then I turn those nouns, production and recycling back into verbs, produced and recycled.

I want to get across two themes in this course. One is that even though we're writing about science, about complex and technical things, that doesn't mean we have to use complex language. We can get across complex and technical ideas even with simple language. If we did that, scientific writing would be a lot easier and more enjoyable to read. And you want to aim to write things that are easy to understand and are enjoyable for your reader.

I love this quote. I pulled this out of something I read back in 2003, and I've kept it in my slides ever since, because I think it makes a really important point. The author writes, my professor friend told me that in his academic world, publisher Parish is really true. He doesn't care if nobody reads it or understands it, as long as it's published. And there's a hint of truth here, right? There is pressure to publish, and sometimes it may feel like you're just trying to get something published and get it on your CV that's a shame, because obviously that shouldn't be the goal of science. If nobody cares about your work and nobody reads it, then obviously it's not going to move science along at all. So when you're sitting down to write, I want you to think very carefully about making sure that your reader understands your writing, and that your reader cares about your writing. You want to make your reader care. If you do that, they're more likely to pick up on your idea, they’re more likely to side your work and it’s more likely to move science forward.

在第二个模块中，我将通过一些具体的例子。这些代表了科学文献中的内容。他们也是不该做什么的例子。我想从免责声明开始我的幻灯片。我拿起片段，句子，从我读过的各种内容，有时候我的学生的作品，有时候是科学文献，我经常批评这篇文章。所以我倾向于省略我的幻灯片中的确切引用，只是为了不会看起来我在批评任何特定的作者。实际上，这些例子只是在科学文献中的典型。我想从一个句子开始，我读在一篇文章在临床肿瘤学杂志。这是最重要的癌症期刊之一，这是介绍部分的第一句话。这是当作者应该把你引进他们的论文。基于肿瘤反应性淋巴细胞的前体选择及其活化和数值表达，并在再灌注至自体肿瘤含有宿主之前进行细胞转移、免疫治疗。现在我有生物学的背景，我仍然觉得这句话很难阅读。我必须努力通过它。这是一种耻辱，因为如果你的读者必须努力通过你的句子，他们可能无法读完你的论文。他们肯定不会理解你的想法所以问问自己这个问题，这句话很容易理解吗？我不认为它是。这句话是愉快和有趣的阅读吗？不，这是不愉快的，当你不得不挣扎只是为了通过它。而真正的科学文献应该是愉快和有趣的阅读。这是另一个有趣的例子。这是我在光化学和光生物学杂志上读的一篇论文。这实际上是一篇有趣的文章，对我们应用防晒霜的方式有一些实际意义。所以我试图为一个非常普遍的观众写这篇文章。我正在阅读文章，然后我得到这句话。这些研究结果表明，抗坏血酸自由基的生产率及其通过脱氢抗坏血酸还原酶来补充抗坏血酸盐池的回收率在较低的辐照度下是相当的，但在较高的辐照度下与抗坏血酸基产量超过它的回收回到抗坏血酸。好吧，你可以看到这句话是令人难以置信的难以阅读。即使你有一个强大的背景在化学，它仍然很难理解。所以你再次想问自己，这句话是可读的吗？我不认为这是非常可读的。它是为了通知还是模糊？我问这个问题是因为，有时候我在阅读科学文献时，我想知道，如果作者是故意模糊，故意默认。如果他们故意试图掩盖他们的材料，希望如果没有人理解它，那么没有人可以在他们的研究中捅洞。当然，我们不想这样做，当然科学写作的重点是告知。我要指出一个功能，这是我刚刚向你们展示的这两个段落的共同点。在这两个例子中，他们把一些漂亮的动词变成笨重的名词。这在学术写作中非常常见，但它使写作难以阅读。因为动词驱动句子，而名词会减慢它们的速度。在第一个例子中，我们有选择、激活、表达和再灌注。这些都是把句子拖下来的名词，但它们可能是动词。选择、激活、表达和重新输入。如果在第二句话中出现同样的问题，我们得到生产和回收这些名词，可能是动词。生产，回收。用动词写作实际上是我们下周将花费很多时间在动词上的东西。所以我拿了第二句话，我试图把它翻译成一些可以理解的东西。这是我想出的。这些研究结果表明，在辐射较低的情况下，抗坏血酸基的产生和回收速度相同，但在辐射较高的情况下，这些自由基的产生速度超过了回收回到抗坏血酸的速度。这不是有史以来最令人兴奋的句子，但我认为现在至少可以理解。你可以得到什么作者试图说的要点。请注意，我在这里做了什么，是我从那句话中剥离了很多额外的单词。我已经把它降到原来的一半大小。然后我把这些名词，生产和再循环转换成动词，生产和回收。我想在这个课程中跨越两个主题。一个是，即使我们正在写科学，关于复杂和技术的东西，这并不意味着我们必须使用复杂的语言。即使用简单的语言，我们也可以体验复杂和技术性的想法。如果我们这样做，科学写作会更容易和更愉快的阅读。你想要的目标是写容易理解和愉快的东西给你的读者。我喜欢这句话，我从2003年读过的东西中拿出来，自那以后我把它放在幻灯片里，因为我认为这是一个非常重要的观点。笔者写道，我的教授朋友告诉我，在他的学术界，出版或灭亡是真的。他不在乎，如果没有人读或理解它，只要它发表。这里有一点真相的暗示吧？有压力要发布，有时候它可能会觉得你只是试图发布一些内容，并在你的简历上得到它。这是一种耻辱，因为显然这不应该是科学的目标。如果没有人关心你的工作，没有人读它，那么显然，它根本不会推动科学。所以当你坐下来写作的时候，我希望你仔细考虑一下，确保你的读者能理解你的写作，并且你的读者关心你的写作。你想让你的读者关心。如果你这样做，他们更有可能接受你的想法，他们更有可能引用你的工作，而且它更有可能推动科学向前发展。