



Chemical Education

A CHIMIA Column

Topics for Teaching: Book Review

‘Lessons in Chemistry’^[1]: The (Un)balanced Chemical Equation of (In)equality

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Abstract: A literary success in 2022, the novel ‘Lessons in Chemistry’ describes the struggle for recognition and independence of a female research chemist in the conservative USA of the 1950’s.

Keywords: Chemistry in fiction · Gender equality · Women in science

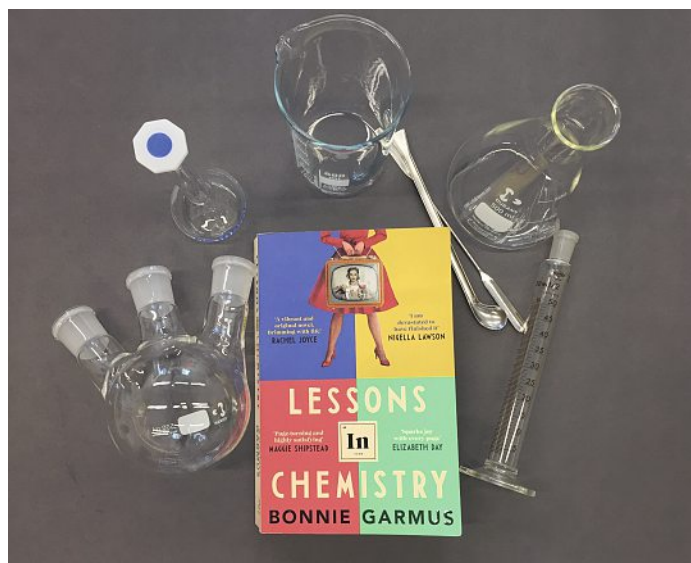


Fig. 1. The printed book pictured with some chemistry lab material.

“What do you know about Elisabeth Zott?”, a friend, a connoisseur of the literary scene, asks me.

“Never heard of her”, I reply.

“Yet you should”, comes the answer. “For she is a famous chemist, the heroine of a successful book that has just been published”.^[2]

I’m thinking: is this one of those women working in the shadow of their husbands/bosses, struggling for recognition in the male-dominated world of science, never obtaining it? Women that we guess are numerous but of whom only a few have emerged from anonymity (and even that post-mortem), like Klara Immerwahr^[3] or Mileva Einstein.^[4] A quick search and the conclusion is clear:

Elisabeth Zott is a research chemist by training who never existed except as a fictional character created by Bonnie Garmus in her debut book ‘Lessons in Chemistry’. Bonnie Garmus, who remarkably is not a scientist but a copywriter, paints an astonishing picture of the discrimination of women in American society in the 1950’s through a fantastic personage. Elisabeth Zott is a gifted, smart and good-looking woman in love with science and as such is in advance of her time: her ideas are those of the XXI century. By adding to this explosive mixture the obscure sides of the scientific world (scientific jealousy, extreme competition, fraud and mobbing) already so well described by Carl Djerassi in his ‘science in fiction’ oeuvre, we could have expected a discouraging or even tragic book. Especially since Garmus gives us the impression that she wants to put her heroine through a maximum of typical coercion situations against women. But none of this: the book is brimming with humour and hope.

Elisabeth Zott already knows what anthropologists will later demonstrate,^[5] i.e. the limitations imposed by society are only “the results of artificial cultural and religious policies” and this gives her strength and resilience. After she suffered an attempted rape at UCLA, she has to leave the laboratory where she was going to do her PhD. Moving to another Californian institute, she has no choice but to accept a position as lab technician, of course paid much less than her male colleagues. In reality, when no one is looking, her labmates, PhD and post-docs, seek her help to interpret their results and design new experiments. At the same time, she is the subject of the macho mockery, especially from her boss who is attacking her constantly with crushing remarks like “you are not smart enough for a PhD level research”. She is in the wrong place, at the wrong time but still very determined to continue her research on abiogenesis and get her PhD. A brilliant young researcher from the same institute notices somehow this unusual woman (unusual already by her presence in the laboratory and not in the secretariat as all the other women in that institute) and falls in love with her. The feelings are mutual and our story could have ended here: married to a Nobel prize nominee, with a happy family and being a wife working for the glory of her husband. Except that our unconventional Zott believes in love and not in the institution of marriage, which would have also imposed a name change that in itself represented already an identity loss for her. She categorically refuses the offer but proposes to live together with her lover, which scandalizes the whole institute. Happiness is short-lived and fate strikes again: her soulmate dies in an accident, leaving her alone and pregnant. As if this was not already hard enough, the men at the institute, playing the “guardians of morality”, have the perfect pretext to kick her out.

Thus begins a new life for our heroine who becomes a mother (“the most unscientific experiment of all time: the raising of another human being”) looking for a job to survive. She accepts an offer from a TV channel to host a cooking show with a meaningful name: ‘Supper at six’. Here again, no one can make her wear the conventional clothes of the “sexy-wife, loving mother”. And she becomes a chemist again because “cooking is chemistry

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and chemistry is life”, equips her kitchen as a laboratory, uses chemical terminology (acetic acid instead of vinegar and sodium chloride instead of salt). The show also becomes a course on molecular gastronomy à la Hervé This.^[6] Yet she goes far beyond that and her program becomes a feminist education platform, teaching chemistry being simply a pretext since: “when women understand chemistry, they begin to understand the real rules that govern the physical world. When women understand these basic concepts, they can begin to see the false limits that have been created for them”. What an wonderful lesson!!

The adventure doesn't end here but I will let you discover the book for yourself. Once you start it will be difficult to put down, as soon as you finish a chapter you immediately want to read the next one, it's almost addictive. The author has even the audacity to slip in the pages the structural formula of oxytocin, the neuropeptide containing nine amino acids, and define it as “a chemical response that resulted in happiness”. For the aficionado, the stereochemistry formula would certainly look more attractive (for this have a look at Fig. 2) but as a scientist I certainly appreciate the temerity of the author and editor who seem to follow in the footsteps of the heroine (a structural chemical formula is not what one would expect in a fiction book...).

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- [2] The book has been translated into French by C. Gaillard-Paris under a new title: 'La brillante destinée d'Elizabeth Zott', editions Robert Laffont, **2022**, ISBN 978-221-25470-7.
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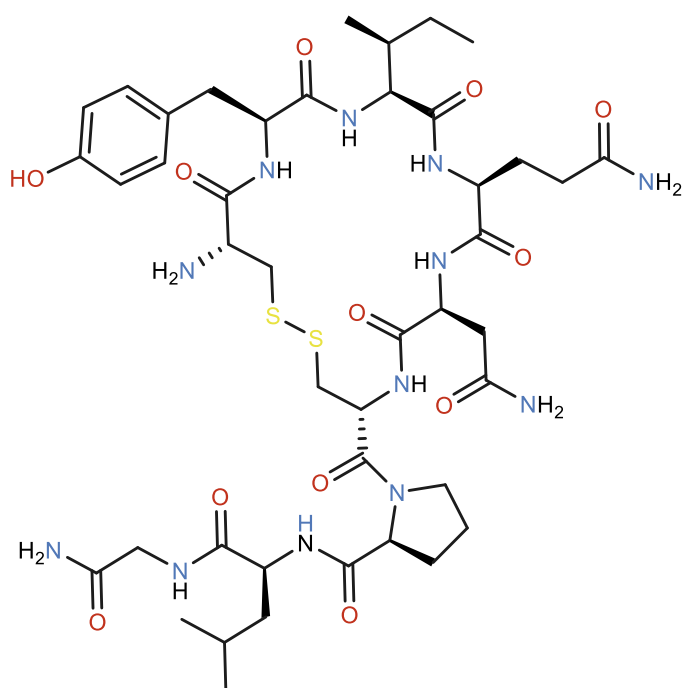


Fig. 2. The structural formula of oxytocine.

Finally, what is the impression left after this reading for all ages and backgrounds? Since the 1950's the status of women in society and in science has changed enormously. Society itself has changed enormously. However, there is still a lot to do. To give just two examples, in Switzerland there are still salary differences between men and women and there are fewer career opportunities for women.

As redundant as it may seem in our XXI century, we should perhaps remember the words of Simone de Beauvoir: “Never forget that it only takes one political, economic or religious crisis for women's rights to be put in jeopardy. Those rights are never to be taken for granted, you must remain vigilant throughout your life”. The times we live in seem to prove her right.