

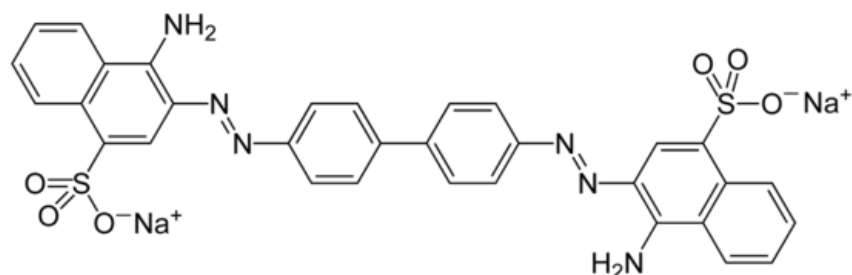
# Congo red

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**Congo red** is a dye originally used in the textile industry, Congo red staining is the diagnostic gold standard for detecting amyloid.

## Chemical Structure



## Brief history

Congo red was first synthesized in 1883 by Paul Bottiger for the Friedrich Bayer Company in Elberfeld as a dye for the textile industry. The actual naming of the color is rather a matter of fashion, since in 1884 a conference on West Africa took place in Berlin and thus this region came into general awareness. The ability of Congo red to stain amyloid was described in 1922 by Hermann Bennhold. Since both healthy and pathological tissues are stained *ex vivo* without further processing, but the dye washes out of healthy tissues relatively quickly *in vivo*, Bennhold used intravenous dye administration for diagnosis. After washing out the healthy tissues, he performed a biopsy and processed the samples using the frozen section method. Later, Bennhold discovered a way to fix Congo red only in amyloid as well as in paraffin sections and in *ex vivo staining*.

## Use in histopathology

### Preparation of preparation

- preparation fixed in neutral formalin
- embedded in paraffin
- slicing into thick sections 2 - 3  $\mu m$
- deparaffinization of sections in xylene
- rinsing in gasoline
- rinse with distilled water
- prestaining with hematoxylin
- washing under running water
- loading into the working solution (1% Congo red + 70% spirit)
- differentiation of cuts in 80% spirit gasoline
- dewatering with a range of spirits
- clarification in xylene
- mounting

### Interpretation

Congo red mainly stains amyloid. Other structures are also stained, the "apple green" birefringence is characteristic of amyloid when examined in a polarizing microscope.

## Other uses

- Similar to amyloid, the LPS of virulent serotype 2a *Shigella flexneri* stains.
- Incubation with Congo Red can be used as a viability test of yeast in suspension.

## Links

### Related Articles

- Amyloidosis
- Staining in light microscopy

- Making a histological specimen

## Literature

- KYLE, R.A.. Amyloidosis: a convoluted story. *Br J Haematol*. [online]. 2001, vol. 114, no. 3, p. 529-38, Available from <<http://www.bloodmed.com/home/hannpdf/bjh2999.pdf>>. ISSN 0007-1048.
- SIPE, J.D. – COHEN, A.S.. Review: history of the amyloid fibril. *J Struct Biol*. [online]. 2000, vol. 130, no. 2-3, p. 88-98, Available from <[https://www.researchgate.net/publication/12380967\\_Review\\_History\\_of\\_the\\_Amyloid\\_Fibril](https://www.researchgate.net/publication/12380967_Review_History_of_the_Amyloid_Fibril)>. ISSN 1047-8477.
- VACEK, Zdeněk. *Histology and histological technique. Part 2, Histological technique*. 1. edition. Brno : Institute for further education of healthcare workers, 1996. ISBN 80-7013-202-7.