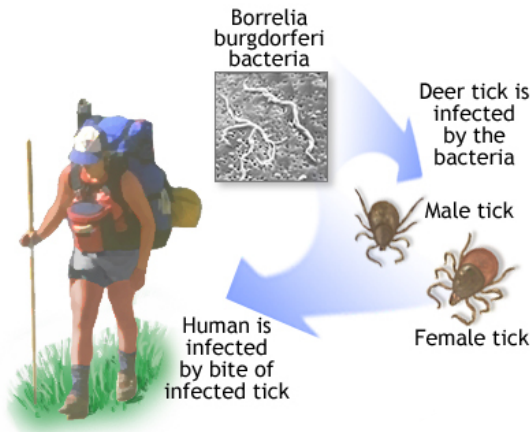


# Borreliosis Diagnosis

“There may not be a single reliable antigen for Lyme borreliosis diagnosis. But together, they can work pretty well.”

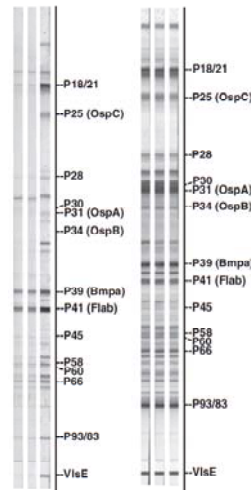
## 1) Infection

Around 2 000 people are yearly infected with *Borrelia* in Czech and 1.7 million worldwide<sup>1,2</sup>.



## 2) Testing

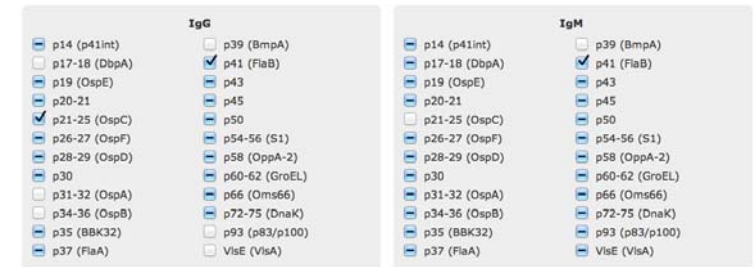
One of diagnostic tests is Western Blot. It measures immune response of the patient.



## 3) Interpretation

The current CDC criteria interprets a test as positive if it contains at least 5 of 10 bands, otherwise the test is negative<sup>3</sup>.

The proposed classification uses all available bands and weights them individually. The classifier is published at borelioza.cz<sup>4</sup>.



## Advantages of the Proposed Interpretation Method:

- 1) Probabilistic interpretation catches borderline cases better than binary classification.
- 2) Increases sensitivity from 34% to 81% while it preserves specificity at 98%<sup>5-8</sup>.
- 3) Optimized for Czech patients on sample of 1 700 Western Blots.

## Disadvantages of the Proposed Interpretation Method:

- 1) More antigens to remember. Alleviated by extensive tooltip description.
- 2) The public version considers only binary intensity of the bands for usability reasons (like CDC does). Nevertheless, a version with a continuous scale is currently evaluated by Dr. Klubal<sup>9</sup>.

## Brief Reference:

The left image with ticks: <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0002296>. The middle image with annotated WBs: <http://dx.doi.org/10.1016/j.jneuroim.2012.10.0111>.

- 1) <http://www.szu.cz/publikace/data/kumulativni-nemocnost-vybranych-hlasenych-infekci-v-ceske>.
- 2) [http://www.rightdiagnosis.com/l/lyme\\_disease/stats-country.htm](http://www.rightdiagnosis.com/l/lyme_disease/stats-country.htm)
- 3) <http://www.cdc.gov/mmwr/preview/mmwrhtml/00038469.htm>
- 4) [http://www.borelioza.cz/cs/klasifikator\\_wb\\_testu](http://www.borelioza.cz/cs/klasifikator_wb_testu).
- 5) <http://dx.doi.org/10.1086/516173>
- 6) <http://www.touchinfectiousdisease.com/system/files/private/articles/1869/pdf/harris.pdf>.
- 7) <http://www.igenex.com/labtest.htm>
- 8) <http://www.asid.net.au/images/PDFs/Poster%20Presentations/Ann%20Mitrovic%201.pdf>.
- 9) <http://www.mc-praha.cz>.