

### Homework # 4 (due Tuesday, Nov.14)

The cytogenetic and molecular genetic (CMG) laboratory is part of the University of Helsinki and Helsinki University Central Hospital. Go to the website.

<http://www.helsinki.fi/cm/>

Click on CGH data and then on Recurrent DNA Sequence Copy Number Amplifications in Human Neoplasms Evaluated by CGH. Here, you can find information on what parts of human chromosomes have been amplified or deleted in different types of tumors. We will focus on DNA deletions. Click on urinary tract cancers and download the MSWord (doc) file. For each different type of cancer, you will see the label for a number of genome regions and, for each genome region, you will see the corresponding number of tumors that have been studied and the number with the given region deleted. Section 6.1 contains information on renal cell carcinoma (RCC) and 6.3 contains information on bladder carcinomas. For RCC, the 8p21.3-pter region was studied for 66 tumors and for bladder carcinoma, a similar region (denoted 8p21-pter) was studied for 95 tumors.

1. Go to the site and see how many tumors showed deletions in these regions for each type of cancer. Then, use the chi-square test to evaluate the null ( $\alpha = 0.05$ ) that the population proportions of deletion of the genome region are the same for each of these types of cancers. What do you conclude ?

You can download a pdf file from the Wisconsin DNR's website

<http://www.dnr.state.wi.us/org/land/wildlife/whealth/issues/CWD/>

entitled "Understanding Chronic Wasting Disease in Wisconsin" (it's near the bottom of the page). The manuscript gives a timeline documenting the discoveries of CWD cases here and in other states. As you'll see there (page 3 - their numbering), 3 cases of CWD were found in a sample of 345 deer taken in 2001. In response to this, 500 more deer were obtained (see page 2 - their numbering) and 15 cases were found in the 500 deer.

2. Construct a 95% confidence interval for the true underlying proportion of CWD in Wisconsin (we've been calling this  $p$ ) using the fact that 15 cases were found in 500 deer. What do you conclude about CWD ?

3-8 From your text: 9.12, 9.45, 10.99, 10.100, 10.101, 10.102