Table 1. Crude and adjusted OR's according to seropositivity for HPV (1-PP)

	All sites Cases	All sites Controls	All sites Adjusted OR	All sites 95% CI Adjusted OR	Oropharynx OR	Oropharynx 95% CI Adjusted OR
HPVE6						
16	8/1399	46/1670	8.73	3.74-20.35	45.7	14.1-148.3
33	3/1399	12/1670	9.92	2.46-39.96	55.3	9.9-306.6
HPVE7						
16	73/1399	122/1670	1.55	1.11-2.18	2.6	1.6-4.2
33	36/1399	57/1670	1.77	1.09-2.85	3.7	1.9-7.1
35	20/1399	42/1670	2.37	1.27-4.39	5.7	2.6-12.8
HPVE1						
16	21/1399	43/1670	2.26	1.23-4.15	5.5	2.5-12.0
HPVE2						
16	24/1399	73/1670	3.07	1.81-5.20	7.5	3.6-15.5
HPV16 E6 E7						
One positive	79/1399	122/1670	1.27	0.91-1.76	1.5	0.9-2.5
Both positive	1/1399	23/1670	56.09	7.21-436.11	451.8	46.8-4359.6

samples were analyzed for 8 low-risk and 9 high-risk HPV types. Antigen proteins included L1, E1, E2, E4, E6, and E7. Statistical analysis included the estimation of crude and adjusted odds ratios (OR) and the respective 95% confidence intervals (95% CI) using unconditional logistic regression. **Results:** The sample comprised 1670 cases and 1399 controls. There were 538 oral cavity cases (32.2%), 353 oropharynx cases (21.1%), and 779 hypopharynx/larynx cases (46.7%). The overall seroprevalence for HPV16L1, HPV16E6, and HPV16E7 infection was 8.6%, 1.8%, and 6.3%, respectively. Seropositivity for HPV 16E6, 33E6, 16E7, 33E7, 35E7, 16E1, and 16E2 increased the risk of developing HNSCC, after adjustment for age, sex, smoking and alcohol consumption. The increasing risk for being positive for both HPV16 E6 and E7 was particularly striking (OR=56.1, 95% CI 7.2-436.1) and the association was stronger for oropharyngeal cancer (Table 1). **Conclusions:** Antibodies to HPV16E6 or HPV16E7 are associated to an increased risk of HNSCC, particularly for oropharyngeal cancer. Further studies are necessary to evaluate the potential use of these antibodies as biomarkers for early detection and also for treatment planning, since it is well known that patients with HPV-positive tumors have a better prognosis.

2-PP
Serologic response to HPV and the risk of head and neck cancer

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In this large hospital-based case-control study, we investigated repair of benzo[a]pyrene diol epoxide (BPDE)-induced damage to DNA and chromosomes in cultured peripheral blood lymphocytes as biomarkers for susceptibility to cancer. We quantified BPDE-induced DNA adducts (BIDA) by the ^{32}P-postlabeling method and frequencies of BPDE-induced chromatid breaks (BICB) simultaneously in *in vitro* BPDE-challenged T-lymphocytes from 798 patients with squamous cell carcinoma of the head and neck (SCCHN) and 821 cancer-free controls frequency matched by age, sex, and ethnicity. The stage distribution of newly diagnosed cases with histopathologically confirmed SCCHN was 10% stage I, 13% stage II, 18% stage III and 59% IV with primary sites located in the oral cavity (30%), oropharynx (46%), hypopharynx (5%) and larynx (19%). The blood was drawn before the patients received any chemotherapy, radiotherapy or surgery. The controls were hospital visitors who accompanied cancer patients to select outpatient clinics and were genetically unrelated to the cases. The blood cultures were established within 8 hours after the sample was collected, and DNA extraction and metaphase preparation were performed for the BIAD and BICB assays, respectively, after the cultures were treated with a previously established concentration of 4 μM BPDE for 5 hours. All odds ratio (OR) and 95% confidence interval (CI) analyses were adjusted for age, sex, ethnicity, smoking and alcohol use in multivariate logistic regression models. Overall, the OR for SCCHN was 1.69 (95% CI = 1.37-2.07) for BIDA and 1.50 (95% CI = 1.22-1.85) for BICB (dichotomized at the control median). When combining both of these two markers using the group with both low BIDA and low BICB as the reference, the OR was 1.83 (1.33-2.51) for the group with high BIDA alone, 1.65 (1.20-2.28) for the group with high BICB alone and 2.49 (1.85-3.36) for the group in the higher strata of both assays. Further analyses showed that there was no statistical correlation between measurements of BIDA and BICB for the cases (r = 0.040; P = 0.256) and only a weak correlation for controls (r = 0.088; P = 0.011) and that there was no evidence for an interaction between these two biomarkers ($P_{interaction}$ = 0.369). These data suggest that BIDA and BICB may be independent and useful biomarkers for susceptibility to SCCHN. (This study was supported by National Institute of Health-National Institute of Environmental Health Sciences grant R01 ES11740)

3-PP
Searching for early breast cancer biomarkers by serum protein profiling in Prospect-EPIC

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Serum protein profiling with SELDI-TOF MS (surface-enhanced laser desorption/ionization time-of-flight mass spectrometry) has frequently been used in attempts to discover early biomarkers for breast cancer (BC). Until now all studies use biological samples collected after diagnosis. The proteins found in these studies have questionable value for early diagnosis because of the often advanced tumor stage.

Here we investigated for the first time prediagnostic serum protein profiles, using the Prospect-EPIC (European Prospective Investigation into Cancer and Nutrition) cohort. In a nested case-control design we compared 68 women diagnosed with BC within three years after enrollment with 68 matched controls for differences in protein profiles in serum that was collected at enrollment.

In total, 22 protein peaks were detected. Mean Z-log-transformed intensities of these peaks were compared between cases and controls and differences were tested with a T test. Three peaks with m/z (mass to charge ratio) 3323 (p=0.013), 8938 (p=0.071) and 9427 (p=0.059) were found to be (borderline) statistically significantly up regulated in BC. Three other peaks (m/z 3888, 7978 and 8148) also showed an up regulation in BC, although not statistically significantly (p= 0.103, 0.149, 0.133).

M/z 8938 and 8148 could represent C3a des arginine anaphylatoxin and a truncated form of this protein that were found to be up regulated in BC in several previous studies investigating 'full blown' BC cases. The finding that these proteins are already up regulated in a pre-diagnostic stage, indicates that they hold promise as true early biomarkers for BC. Further research needs to establish the identity of the proteins and to confirm our results.

4-PP
Genetic variants in fibroblast growth factor receptor 2 (FGFR2) contribute to susceptibility of breast cancer in Chinese women

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Recent evidence indicates that small, non-coding RNA molecules, called microRNAs (miRNAs), function as tumor suppressors or oncogenes. Mutation, mis-expression or altered mature miRNA processing are implicated in carcinogenesis and tumor progression. We conducted a systematical