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KEY=PAPER - AUGUSTUS AMARIS

BREAST CANCER AND THE ENVIRONMENT

A LIFE COURSE APPROACH

National Academies Press **Breast cancer remains the most common invasive cancer among women. The primary patients of breast cancer are adult women who are approaching or have reached menopause; 90 percent of new cases in U.S. women in 2009 were diagnosed at age 45 or older. Growing knowledge of the complexity of breast cancer stimulated a transition in breast cancer research toward elucidating how external factors may influence the etiology of breast cancer. Breast Cancer and the Environment reviews the current evidence on a selection of environmental risk factors for breast cancer, considers gene-environment interactions in breast cancer, and explores evidence-based actions that might reduce the risk of breast cancer. The book also recommends further integrative research into the elements of the biology of breast development and carcinogenesis, including the influence of exposure to a variety of environmental factors during potential windows of susceptibility during the full life course, potential interventions to reduce risk, and better tools for assessing the carcinogenicity of environmental factors. For a limited set of risk factors, evidence suggests that action can be taken in ways that may reduce risk for breast cancer for many women: avoiding unnecessary medical radiation throughout life, avoiding the use of some forms of postmenopausal hormone therapy, avoiding smoking, limiting alcohol consumption, increasing physical activity, and minimizing weight gain. Breast Cancer and the Environment sets a direction and a focus for future research efforts. The book will be of special interest to medical researchers, patient advocacy groups, and public health professionals.**

DESIGN THINKING IN HEALTHCARE

DEVELOPING PATIENT-CENTRED COMMUNICATION MATERIALS FOR BREAST CANCER DETECTION

This thesis is the culmination of five years of communication design research (2006 - 2010) on a specific area of healthcare-breast cancer detection and screening. It is a project-based doctoral work, underpinned by a practice-led research journey of a graphic designer. The result is this written thesis with an accompanying set of uniquely designed objects: • a series of posters on breast cancer detection • an educational leaflet and risk assessment form • a series of working website prototypes (see worldwidebreastcancer.com) This thesis offers an in-depth case study that demonstrates and contextualises the need for using communication design in patient engagement and education efforts in order to create a more patient-centred experience in breast cancer detection. The significant contributions of this thesis are: • the development of a human-centred design thinking methodology, known as the 'USER' model, which helps a designer develop a product for use within a system in an iterative, intuitive and analytical way. This is the first design thinking model of its kind to embed a framework for analysing objects within a systems framework; • the production and testing of visual metaphor, which was found to improve patient literacy and confidence. The significance of this has been to increase the potential for symptoms to be reported early and decrease mortality rates; • a map illustrating the patient journey of breast cancer screening that illustrates roles, communications and detection activities. This has been developed for general practices and imaging centres in a visually clear and distinct way; • a risk assessment tool that encourages doctors and patients to engage in collaborative decision-making in the planning of breast cancer screening activities. Finally, the work presented here has profound implications for future studies of patient engagement and health literacy in breast cancer detection. The research journey, findings and objects in this thesis may lead to improved patient communication experiences and decreased mortality in breast cancer. This thesis also acts as a model for exploring and developing design solutions for other health causes.

BIOLOGY OF BREAST CANCER: A PREDOCTORAL TRAINING PROGRAM

Implementation of a new predoctoral program in the "Biology of Breast Cancer" has facilitated the training of investigators committed to future careers in the study of breast cancer. The scope of this program has been limited to the training of predoctoral (i.e., Ph. D. and M.D., Ph. D.) candidates. USAMRDC support for this program has resulted in the development of a truly outstanding, multidisciplinary, didactic curriculum in tumor biology, which includes a strong emphasis in breast cancer. To date, 16 trainees have matriculated into this new training program. Two trainees have successfully completed this training program and have left the Mayo Clinic to continue their training/careers in breast cancer research. All of the remaining trainees are conducting breast cancer relevant thesis research and continue to make excellent progress in their studies. This final report includes the product of our last task (i.e., Task 6) of our original statement of work which is a formal written evaluation, and also includes the comments of our two external reviewers (see Appendix).

PERSPECTIVES IN MAMMARY GLAND DEVELOPMENT AND BREAST CANCER RESEARCH

Frontiers Media SA

BREAST CANCER

A PERSONAL HISTORY AND AN INVESTIGATIVE REPORT

Houghton Mifflin Harcourt P

BREAST CANCER RESEARCH. AGEING AS PREDISPOSING FACTOR

GRIN Verlag **Diploma Thesis from the year 2018 in the subject Health - Nursing Science - Geriatric Care, grade: A, Kenyatta University, language: English, abstract: This work investigates whether age is among the predisposing factors for breast cancer. Breast cancer is heterogeneous malignant cells whose specific age profiles exponentially increases until menopause after which it rises gently slowly thereby reflecting the superimposition of the early and late onset rates of breast cancer. The early onset breast cancers represent mainly the untimely life transforming or inherited consequences on the undeveloped epithelium, while late-onset breast cancers in most cases are likely to follow an extended exposure to supporting stimulus of vulnerable epithelium, which has botched to age normally. Biomarker studies and clinical observations indicates that the latter staged breast cancer types often develop slowly and are less biologically aggressive compared to the early staged breast cancers despite being under the control of hormone receptors such as growth factor receptor abbreviated as (HER2) and estrogen receptor (ER), expressions hence supporting the conclusion that breast cancer biology is age dependent. Approximately twelve percent of women across the globe in the current society are annually affected by breast cancer. Moreover, while breast cancer incidence increases with age advancement, patients of younger age at diagnosis are largely associated with increase in the mortality rate. This research discusses most of the age-related factors, which affect the identification or diagnosis, treatment, and management of breast cancer incidence; examining main concepts and exploring vital areas, which calls for additional research. Ageing as a predisposing factor for breast cancer will be examined in connection to diagnosis and treatment with special reference to nodal status, hormone factors, breast cancer subtypes and genetic status. Further, although narrowly, the study will also touch on the future expectations of breast cancer identification and treatment through examination of some rising potential technologies and breast cancer tests like the miRNA.**

BREAST CANCER AND ITS IMPACTS ON A WOMAN'S LIFE AND PSYCHE

This paper focuses on the topic of breast cancer, to be precise on the impacts it has on a woman's life and psyche. In order to obtain significant results all the patients interviewed were stage I sufferers. These results were achieved through several interviews with patients as well as a doctor. Literature research also provided several pieces of information included in this paper. Breast cancer can have many different faces, varying from stage 0 to IV as well as being either triple negative, hormone positive or Her-2 positive. This immense variety of breast cancer types will also have a vast variety of responses in women affected. Whilst there are a few factors that can increase the risk of obtaining breast cancer, in most cases these are predetermined and cannot be altered much. The most common risk factor, the genetic predisposition is responsible for a staggering ten percent of all breast cancer cases these days and it is not curable or preventable. Sadly, breast cancer is also one of the most widely diagnosed types of cancer, being the second most common cancer in Switzerland. My thesis was that each individual deals with a similar illness in her own way, which I tried to prove throughout my paper by analysing three different patients suffering the same stage of breast cancer.

TO DANCE WITH THE DEVIL

THE NEW WAR ON BREAST CANCER

An investigative journalist offers an in-depth report on the current research, politics, and economics behind breast cancer, from the heights of the nation's capital to the labs of genetic researchers to the private dramas of individual patients. Tour.

FROM CANCER PATIENT TO CANCER SURVIVOR

LOST IN TRANSITION

National Academies Press **With the risk of more than one in three getting cancer during a lifetime, each of us is likely to experience cancer, or know someone who has survived cancer. Although some cancer survivors recover with a renewed sense of life and purpose, what has often been ignored is the toll taken by cancer and its treatmentâ€"on health, functioning, sense of security, and well-being. Long lasting effects of treatment may be apparent shortly after its completion or arise years later. The transition from active treatment to post-treatment care is critical to long-term health. From Cancer Patient to Cancer Survivor focuses on survivors of adult cancer during the phase of care that follows primary treatment. The book raises awareness of the medical, functional, and psychosocial consequences of cancer and its treatment. It defines quality health care for cancer survivors and identifies strategies to achieve it. The book also recommends improvements in the quality of life of cancer survivors through policies that ensure their access to psychosocial services, fair employment practices, and health insurance. This book will be of particular interest to cancer patients and their advocates, health care providers and their leadership, health insurers, employers, research sponsors, and the public and their elected representatives.**

A TRAINING PROGRAM IN BREAST CANCER RESEARCH USING NMR TECHNIQUES

This is a six year training program in breast cancer research using NMR techniques. This program has supported seven predoctoral students and five postdoctoral students. All the trainees have learned the theory and instrumentation of MRI. They have been actively involved in one of the seven research projects: (1) NMR studies of phosphorus metabolites of breast cancer cells using an improved cell perfusion system (2) Segmentation of mammographic masses (3) Establishment of an image database for computer-aided-diagnosis (CAD) research development (4) F19 NMR detection of trifluoperazine crossing Blood-Brain-Barrier through Pgp modulation (5) Tumor-targeted MR Contrast Enhancement by Anti-transferrin Receptor scFv-Immunoliposome Nanoparticles (6) MRI and histological correlations of cortical brain volumes in APP/PS1 mice (7) Enhanced molecular imaging with fused optical and MRI images. The trainees have attended the weekly seminars in the Cancer Center and also attended a special NMR seminar series in the Department of Radiology. Eight papers have been published and 16 abstracts have been presented in the national and international meetings. Five grants including a USAMRMC postdoctoral award have received.

MANAGING A HEALTH CARE ALLIANCE

IMPROVING COMMUNITY CANCER CARE

Jossey-Bass **The program offers compelling evidence of the effectiveness of joining clinical research facilities and community providers. As the study demonstrates, the research centers benefit from the pool of diverse participants in clinical trials and the communities have access to state-of-the-art care.**

MOTHERHOOD AND WELL-BEING IN YOUNG BREAST CANCER SURVIVORS

Parenting is a primary role for many young breast cancer survivors and the combined effect of parenting while coping with this disease can be problematic for many of them. Despite this, little is known about the impact of parenting on the well-being of young breast cancer survivors. This thesis, comprising two studies in article format, explores this question. In the first study, we identified elements of well-being that are salient for all young women with breast cancer, and which also captured some of the unique challenges associated with parenting as a survivor. Using factor analysis techniques, we determined how these elements interrelated in separate groups of young survivors with children and without, and identified differences between the two groups based on the patterns observed. We found that the interrelationship among elements of well-being varied between these two groups: psychological distress (representing mental health and perceived stress), illness intrusiveness, and fear of cancer recurrence were found to co-occur more frequently in mothers than in young survivors without children, thus compromising their well-being. Our second study had two objectives. The first part examined differences in perceived stress, illness intrusiveness, and fear of cancer recurrence between young breast cancer survivors with and without children in two separate timeframes (0-5 and 5-15 years since diagnosis). The second part identified predictors for these elements of well-being in young mothers exclusively. Compared to survivors without children, young mothers reported higher levels of fear of cancer recurrence and illness intrusiveness in intimate life domains during both timeframes, suggesting that disruptions in these areas persist over time. Part two revealed that mothers with adolescent children and high levels of parenting stress were most likely to report perceived stress and illness intrusiveness. A mother's age and the time since her diagnosis predicted fear of cancer recurrence and illness intrusiveness, respectively. Results from this thesis indicate that young mothers with breast cancer need screening and interventions to manage psychological distress, fear of cancer recurrence, and illness intrusiveness, particularly in intimate life domains. This thesis also identifies the most vulnerable groups of mothers and has important implications for future research.

BIOPSYCHOSOCIAL RESEARCH TRAINING IN BREAST CANCER

A total of 5 trainees were enrolled in the training program, all graduate students in the APA-approved clinical health psychology program. Four of these trainees have completed their graduate coursework and have commenced or completed APA-approved clinical internships. Of these tour, three have defended their dissertations and one is in the final stages of defending her dissertation. One trainee, now funded through a Maytag Fellowship, has defended her thesis, has initiated her dissertation work and is applying for clinical internship this year. All training was closely coordinated with ongoing ACS-funded and NCI-funded biopsychosocial breast cancer research projects. Trainees also participated in preparing new grant proposals focusing on the biopsychosocial aspects of breast cancer and implemented projects funded with seed money from our cancer center. All trainees co-authored at least one empirical manuscript and presented their breast cancer-related research at national scientific meetings. All trainees were exposed through coursework to experimental design and statistics as well as psychosocial, biobehavioral and pathophysiologic perspectives on breast carcinoma and other chronic diseases. The latter focus is extended through the program's monthly Breast Cancer Research Seminar, weekly Psycho-Oncology Clinical Workshop, weekly Breast Cancer Team Research meeting, and monthly Psychoneuroimmunology Journal Club meeting. All trainees also completed clinical practica at a variety of sites including those specifically focused in psycho-oncology and other areas of health psychology. This report summarizes the activities and accomplishments of the training program across the following areas: Symposia/Didactic Experiences; Active Biopsychosocial Breast Cancer Research Protocols; Cancer Center Programs, Facilities and Resources; Trainee Progress; and Publications and Presentations of Training Program Faculty and Trainees.

CANCER

THE EVOLUTIONARY LEGACY

Oxford University Press, USA **Cancer is everywhere. Around one in three of us will at some time in our lives have an unwelcome diagnosis of cancer; every day 1500 Americans and vastly more non-Americans die of the disease. For Western societies relishing health, wealth, and longevity, its continued prominence is one of thegreatest challenges to our scientists. And the illness we call cancer is extraordinarily diverse in its causation, symptoms, likelihood of effective treatment - in some sense, every patient's cancer is unique, and that is part of the problem. In this important new book, Mel Greaves explains why theold paradigms of infectious diseases or genetic disorders have proved fruitless when trying to account for the complex and elusive puzzle that is cancer. Rather, he claims that looking at cancer in its evolutionary context, we can begin to answer some of the big questions in cancer that concern usall. Drawing on both ancient and more modern evolutionary legacies, he shows how human development has changed the rules of evolutionary games, trapping us in a nature-nurture mismatch. Compelling examples, from the King of Naples intestinal tumour in the 15th Century, through the epidemic ofscrotal skin cancer in 18th century chimney sweeps, to the current surge of cases of prostate cancer illustrate his thesis. And finally, he looks at the implications for research, prevention, and treatment of cancer that an evolutionary perspective provides. Drawing on all the most recentresearch, this is the first book to put cancer in its evolutionary framework. At a time when Darwinian perspectives on everything from language acquisition to economics are gaining ground, medicine seems to have much to gain from the insights provided by evolutionary biology. Written in anexceptionally lucid and entertaining style, this book will be of broad interest to all those who wish to understand the big C, the biggest killer of them all.**

BATHSHEBA'S BREAST

WOMEN, CANCER, AND HISTORY

JHU Press **Documents the celebrated 1967 article by an Italian surgeon who concluded that Rembrandt's model and mistress, Hendrickje Stoffels, died of breast cancer, and continues with a narrative history of the disease, its treatments, and several of its noteworthy patients.**

THE INFLUENCE OF SOCIAL SUPPORT ON BREAST CANCER SCREENING

THE BODY IMAGE AFTER BREAST CANCER QUESTIONNAIRE [MICROFORM] : THE DESIGN AND TESTING OF A DISEASE-SPECIFIC MEASURE

National Library of Canada = Bibliothèque nationale du Canada

A DARKER RIBBON

BREAST CANCER, WOMEN, AND THEIR DOCTORS IN THE TWENTIETH CENTURY

Beacon Press (MA) **Covers the history of breast cancer from a cultural perspective focusing on how the social acceptance of the unequality of men and women have impeded progress in finding a cure**

BIOLOGICAL BASIS OF GERIATRIC ONCOLOGY

Springer Science & Business Media **This volume highlights research issues specific to geriatric oncology in the field of carcinogenesis and cancer prevention and treatment, based on the**

biologic interactions of cancer and age. It conveys a sustainable way of thinking about cancer and aging.

COMPUTERIZED ANALYSIS OF MAMMOGRAPHIC IMAGES FOR DETECTION AND CHARACTERIZATION OF BREAST CANCER

Morgan & Claypool **The identification and interpretation of the signs of breast cancer in mammographic images from screening programs can be very difficult due to the subtle and diversified appearance of breast disease. This book presents new image processing and pattern recognition techniques for computer-aided detection and diagnosis of breast cancer in its various forms. The main goals are: (1) the identification of bilateral asymmetry as an early sign of breast disease which is not detectable by other existing approaches; and (2) the detection and classification of masses and regions of architectural distortion, as benign lesions or malignant tumors, in a unified framework that does not require accurate extraction of the contours of the lesions. The innovative aspects of the work include the design and validation of landmarking algorithms, automatic Tabár masking procedures, and various feature descriptors for quantification of similarity and for contour independent classification of mammographic lesions. Characterization of breast tissue patterns is achieved by means of multidirectional Gabor filters. For the classification tasks, pattern recognition strategies, including Fisher linear discriminant analysis, Bayesian classifiers, support vector machines, and neural networks are applied using automatic selection of features and cross-validation techniques. Computer-aided detection of bilateral asymmetry resulted in accuracy up to 0.94, with sensitivity and specificity of 1 and 0.88, respectively. Computer-aided diagnosis of automatically detected lesions provided sensitivity of detection of malignant tumors in the range of [0.70, 0.81] at a range of falsely detected tumors of [0.82, 3.47] per image. The techniques presented in this work are effective in detecting and characterizing various mammographic signs of breast disease.**

EVALUATION OF HYALURONAN METABOLISM AS A THERAPEUTIC TARGET IN THE TREATMENT OF BREAST CANCER

Hyaluronan (HA) is a ubiquitous component of the extracellular matrix where it has important roles in the maintenance of tissue hydration and structural integrity. Malignant transformation is typically accompanied by changes in the cellular microenvironment, including altered composition of the extracellular matrix. Increased deposition of HA in the extracellular environment is frequently reported, where increased concentrations of cell-associated and stromal hyaluronan are considered poor prognostic indicators in several cancers. Upregulation of the expressions of the transmembrane HA synthetic proteins, the hyaluronan synthases (HAS), are implicated in the generation of heightened HA concentrations observed in cancer, where the interaction of the synthetic product with its cellular receptors generates signalling cascades which promote malignant progression. This thesis has explored the contribution of hyaluronan synthase 2 to breast cancer progression by overexpression of HAS2 in the ZR-75-1 human breast epithelial ductal carcinoma cell line, which has been previously reported to exhibit low HA synthetic capacity and CD44 expression. Overexpression of HAS2 induced up to a ~10 fold increase in the concentration of liberated HA, which stimulated expression of both CD44s and CD44v9. The increased HA-CD44 interactions afforded by HAS2 overexpression mediated activation of the PI3K/Akt pathway and increased the propensity for glycolytic metabolism, thereby implicating HAS2 in the dynamics of cellular energy metabolism. Furthermore, HAS2 modulated the expression of key breast cancer glycolytic markers including TKTL1 and PKM2. Downregulation of the glucose transporter GLUT1 contrasted the classic glycolytic phenotype, however may be indicative of the capacity of HA to act as an alternate energy source. The acquisition of an invasive, proliferative phenotype which is associated with both the induction of aerobic glycolysis (Warburg effect) and the increased production of HA was apparent in >6 fold increases in endpoint tumor volume and decreased overall survival in a model of metastases in the HAS2 transfectants relative to the control cell lines. The multifaceted roles of HA production in breast cancer that have been highlighted by findings of this thesis implicate HAS in the malignant process, and indicate that the isoforms warrant targeting by novel therapies. The inhibition of HA translocation across the cell membrane represents an approach to inhibition of HA synthesis. The recently described role of ABC transporter, MRP5, in HA translocation prompted investigation of the effect of pharmacological inhibition of ABC transporters on the export of HA and properties of breast cancer. Findings generated in this thesis however refuted a role for ABC transporters in breast cancer, demonstrating no reduction in liberated HA nor alteration of cellular HA localisation in response to inhibition of a wide range of ABC transporters. In accordance with this result, low endogenous expression of transporters was identified in a panel of breast cancer cell lines, where there was no significant correlation identified between HAS expression, HA production and ABC transporter expression. Furthermore, the HA glycocalyx was well retained in the presence of ABC transporter inhibitors, disproving the role of ABC transporters in HA translocation in breast cancer and possibly suggesting the means of HA export is cell-type dependent.Given the lack of inhibitory activity of ABC transporter inhibitors on HA synthesis, novel HAS antibody inhibitors were designed, synthesised and characterised in breast cancer and non-malignant cell lines in vitro. Antibodies were targeted to distinct epitopes within HAS1, where western blotting and FACS analysis confirmed the specific targeting of the HA synthase. The designated INT-1 and EX-1 antibodies were localised to their hypothesised intracellular and extracellular localisations, whilst the INT-2 antibody binding epitope was localised to the intracellular environment in non-malignant cell lines, and the extracellular environment in a panel of breast cancer cell lines. The capacity of the INT-2 antibody to discriminate between the hyaluronan synthase in malignant and non-malignant tissue and have specific inhibitory activity in malignant tissue only, has unique implications for both the targeted cancer-specific inhibition of HAS, and the structure and topology of the protein within the plasma membrane. Functionally, the inhibitory effects of the antibodies translated to reductions in liberation of HA and cell proliferation, which were consistent with the characterised HA synthesis inhibitor, 4-methylumbelliferone. Analysis of cell morphology by scanning electron microscopy suggested that HAS antibodies may be inducing necrosis.The collective work in this thesis highlights the importance of HAS and HA production in breast cancer, and the potential therapeutic value in their inhibition. Whilst the ABC transporters are not legitimate targets for inhibition of HA export in breast cancer, the design and generation of novel antibody inhibitors represents a highly significant finding in HA research. The seemingly altered organisation of the HA synthase in breast cancer which results in the accessibility of the INT-2 binding domain and the resultant inhibitory activity that it mediates, could be exploited in the development of novel breast cancer therapeutics, and in turn abrogate the many pro-malignant effects of the once seemingly innocent structural molecule of hyaluronan.

TAMOXIFEN

MOLECULAR BASIS OF USE IN CANCER TREATMENT AND PREVENTION

John Wiley & Son Limited **Currently there is considerable interest in the uses of tamoxifen not only to treat breast cancer but also to prevent it. Its potential as a major chemopreventative agent has attracted controversy relating to the possible harmful side-effects of tamoxifen therapy but also to its potential to protect against other cancers, cardiovascular disease and osteoporosis. This book explains the molecular basis of the action of tamoxifen, knowledge of which is vital to the understanding of its present uses and future potential, particularly in relation to the development of new derivatives. The book is a fully integrated, extensively referenced account of a wide range of topics relevent to the clinical use of tamoxifen, providing a comprehensive guide for those working in clinical and biomedical research within the pharmaceutical industry and in the fields of biochemistry, pharmacology, nutrition, oncology, toxicology, molecular and cellular biology, pharmacy, and obstetrics and gynaecology. The book’s readable also makes it accessible to medical practitioners and students of medicine and biology.**

THE IMPACT OF WOMEN IN CONGRESS

Oxford University Press on Demand **While existing literature provides compelling evidence that women in public office make a difference, the relationship between descriptive and substantive representation of women in political institutions long the domain of men is neither simple nor certain. Embracing New Institutionalists' warnings of the dangers of studying behaviour in an institutional vacuum, this book uses two strikingly different yet consecutive congresses - the Democratically controlled 103rd Congress electedduring the 'Year of the Woman' and the Republican-controlled 104th Congress elected during the 'Year of the Angry White Male' - as laboratories to explore the complexity of the relationship between women's presence and impact. In-depth interviews with hundreds of staff, lobbyists, and women membersof Congress, along with other quantitative and archival data, are the foundation for case studies of three highly visible policy areas (reproductive rights, women's health, and health care policy) important to women, but with strikingly different outcomes across the two Congresses.The inquiry is quickly moved beyond the simple question 'Do women make a difference?' Dodson confronts the contested issues surrounding difference which often lurk beneath the surface - the probabilistic rather than deterministic relationship between descriptive and substantive representation of women, the contested legitimacy of women representing women, and the disagreement about what it means to represent women. The analysis moves the literature toward a better integrated understanding ofhow gendered forces at the individual, institutional, and societal levels combine to reinforce and redefine gendered relationships to power in the public sphere. The results can be generalized over time and across settings, are meaningful even in periods when the answer to the question of whetherwomen make a difference seems to be more frequently 'no' than 'yes,' and point to strategies that may bolster the impact of women's presence for substantive representation of women.**

POWER DYNAMICS AND INTEGRATIVE TREATMENT MODALITIES IN BREAST CANCER PATIENTS

This thesis focused on a set of twenty women living with breast cancer in Humboldt County, California. This study explores the power dynamics between the patients, doctors, and healthcare providers, as well as the integrative treatments used, to explore such sociological components as power, authority, oppression, the “sick role,” and gender in the illness narratives. I utilized a mixed-methods approach, through quantitative short paper-based surveys and qualitative in-depth semi-structured interviews. With this thesis, I build on prior qualitative analyses of breast cancer narratives and stories, and aspects of conventional or complementary and alternative medicine. This research uses grounded theory to examine the influential themes that were present within the levels of power and within the diverse treatments in this population. The results indicate the different levels of power dynamics that were present, as well as the categories of integrative treatment modalities in people living with breast cancer. The key findings are that breast cancer survivors in Humboldt County experience different challenges to their power-from-within, power-over-participants, and power-with-participants. Having access to integrative treatments was seen to benefit many participants and support personal power.

HER2-POSITIVE BREAST CANCER

Elsevier Health Sciences **Get a quick, expert overview of clinically-focused topics and guidelines that are relevant to testing for HER2, which contributes to approximately 25% of breast cancers today. This concise resource by Drs. Sara Hurvitz, and Kelly McCann consolidates today’s available information on this growing topic into one convenient resource, making it an ideal, easy-to-digest reference for practicing and trainee oncologists.**

SERUM AUTOANTIBODIES AS TUMOUR MARKERS IN BREAST CANCER

THEIR ROLE IN SCREENING, DIAGNOSIS AND PROGNOSIS

Introduction: Early diagnosis of breast cancer can result in less radical therapy and improved survival. Current screening and diagnostic tools have limitations, as do serum marker antigens due to their low sensitivity. We hypothesised that an immune response is an early event in cancer evolution. Autoantibodies, which are the amplified signals of cancer-derived antigens, can be detected in the peripheral blood of women with early breast cancer. This thesis is a continuation of previous work at the Nottingham Breast Unit aimed at developing new panel of assays for the detection of autoantibodies in breast cancer. The goal of this thesis was to investigate the use of a potentially more reproducible ELISA assay to measure serum autoantibodies to MUC1, p53 and c-myc either singly or in combination within a panel to further clarify a role of AAbs in screening, diagnosis or prognosis of primary breast cancer. Methods: Newly expressed, biotinylated and reconfigured p53 and c-myc antigens and purified MUC1 antigen were used to establish novel in-house ELISA. These were used to measure autoantibodies to the above 3 antigens in the serum of various populations which were collected over a two year period. These populations included an at-risk population (e.g. family history and atypical ductal hyperplasia) and a population of women who had just been diagnosed with primary breast cancer, either non-invasive ductal carcinoma in situ (DCIS) or invasive cancers. Cut-off values were established for each of the autoantibodies based on 2 or 3 standard deviations from the mean of a population of control samples. The control samples were obtained from a population of women who were either deemed 'normal' or who had a histological diagnosis of benign breast disease. The assay was validated by assessing effect of sample age as samples were of varying age, reproducibility using Bland Altman coefficient of reproducibility and reliability by establishing the assays ability to distinguish cancer from non-cancer. Results: Eight hundred and ninety eight samples were analysed in the study. One hundred and ten were Control samples. The remaining samples included 381 that were from an at-risk population and 407 that were from a primary breast cancer population. Mean ages of Control, at-risk and primary breast cancer populations were 58.8, 50 and 62.9 years respectively. Data establishing validity of assay confirmed that sample age did not affect signal strength for MUC1 and c-myc autoantibodies. Older samples for the p53 autoantibody had lower signal than recent ones. Reproducibility data was satisfactory and was best in the samples from the group of women with benign breast disease. Using either a 2 or 3 standard deviation cut-off value the assay was also able to distinguish cancer from non-cancer for both MUC1 and p53 autoantibodies. For the c-myc autoantibody, cancer samples showed increased signal compared to non-cancer although this did not reach significance. The at-risk population were routinely followed up in an outpatient clinic dedicated for women at increased risk of breast cancer. An individual positive marker was noted in up to 10% of at-risk patients. The panel of 3 assays showed a raised marker in 18.4%. This was significantly higher than that for the Control population whose panel detection was 9.1% whilst an individual marker was noted in up to 4.5% of samples. Only the c-myc autoantibody had similar prevalence in both Control and at-risk populations. There was no correlation between risk category and autoantibody detection. The specificity for MUC1, p53 and c-myc autoantibody serum tumour markers were 92.4%, 95.2% and 95% respectively. Specificity of the assay can be further increased if two or more markers were needed to be positive before a positive result is deemed for the assay. Thirteen women in the at-risk group developed breast cancer. The panel had a higher sensitivity to detect occult tumours compared to individual markers but at reduced specificity. Two of 13 at-risk patients (15.4%) who developed breast cancer had a raised marker (MUC1 & p53 autoantibodies) within the panel with a mean lead-time of 43.5 months. Further increasing the cut-off value to Mean + 4 standard deviation of Control population increased the specificity of the panel assay to 97.2% without altering the sensitivity to detect occult tumour (15.4%). Primary breast cancer population consisted of patients who were known to have DCIS or invasive breast cancer. The latter group was further subdivided into those who were detected via screening mammogram (screen-detected) and those who presented with a lump (symptomatic). Two of the 3 markers (p53 and c-myc autoantibodies) were significantly raised in the primary breast cancer population compared to the at-risk population as well as the Control group as detailed in earlier paragraph. Individual markers were detected in up to 20.9%, 10.3% and 9.8% for p53, c-myc and MUC1 autoantibodies respectively. The panel detection rate was 35.1%. The tumour markers showed limited use as a prognostic factor. Only the c-myc autoantibody correlated with a poorer survival due to distant metastasis in symptomatic breast cancers. Data for the screen-detected breast cancer cases showed that there were no correlation between any of the 3 serum marker detection and prognosis. Conclusion: Our data demonstrated the three autoantibody assays whether singly or in combination as a panel showed differences not only between cancer and non-cancer but also between Control and at-risk, as well as between at-risk and cancer. The panel showed that one or more assays were positive in 35% of breast cancers with a specificity of 83.6%. The specificity of the assay can be altered to meet clinical needs by either increasing the cut-off value or altering the markers within the panel. Current data in the literature suggests a number of markers that may be added or substituted into the panel to enhance the specificity and sensitivity. However a sensitivity of 15.4% for detection of occult tumour in the at-risk group makes any clinical application for screening in this group less cost effective using the version of the assays described in this thesis. The lead-time in the two patients who did show elevation of an autoantibody suggests that if the sensitivity and specificity can be improved that there is an in-vivo amplification signal, which might allow earlier identification of some breast cancers. Detection of c-myc autoantibodies indicates a poorer prognosis in the symptomatic group. The value of this information needs to be further determined in larger studies and within multivariate analysis. If the current results remain then there may be clinical implication to this early data. Comparison with previous data from the unit revealed that detection of cancer-associated autoantibodies in primary breast cancer and at-risk groups using this methodology appeared to be less sensitive. This may indicate that the current method has been successful in reducing background signal and hence reduce false positive results. It therefore appears that we have established a more reliable and reproducible assay compared to previous study to detect autoantibodies to tumour-associated antigens. However it is noted that this thesis reports single batches of antigens (MUC1, p53 and c-myc) used in the autoantibody assays. Investigation of differences in protein structure and immunogenicity between batches, which might also affect the sensitivity and specificity of these assays, was outside the scope of this thesis but is the subject of ongoing research by other members of the research group.

APPLICATION OF BIOINFORMATICS IN CANCERS

MDPI **This collection of 25 research papers comprised of 22 original articles and 3 reviews is brought together from international leaders in bioinformatics and biostatistics. The collection highlights recent computational advances that improve the ability to analyze highly complex data sets to identify factors critical to cancer biology. Novel deep learning algorithms represent an emerging and highly valuable approach for collecting, characterizing and predicting clinical outcomes data. The collection highlights several of these approaches that are likely to become the foundation of research and clinical practice in the future. In fact, many of these technologies reveal new insights about basic cancer mechanisms by integrating data sets and structures that were previously immiscible. Accordingly, the series presented here bring forward a wide range of artificial intelligence approaches and statistical methods that can be applied to imaging and genomics data sets to identify previously unrecognized features that are critical for cancer. Our hope is that these articles will serve as a foundation for future research as the field of cancer biology transitions to integrating electronic health record, imaging, genomics and other complex datasets in order to develop new strategies that improve the overall health of individual patients.**

NEW APPROACHES TO BREAST CANCER RADIOTHERAPY

Frontiers Media SA

ASSESSMENT OF CAUSATION IN EPIDEMIOLOGIC RESEARCH

GRIN Verlag **Essay from the year 2009 in the subject Medicine - Epidemiology, grade: A, Trident University, language: English, abstract: In this assignment I assessed the relationship between soy consumption and breast cancer which has been studied by Sacks et al (2006), Messina & Loprinzi (2001), Wu et al (2008), and Trock et al (2006). I used the Bradford Hill criteria and assess whether soy has an inverse causal relationship with breast cancer.**

BIOMEDICAL COMPUTING FOR BREAST CANCER DETECTION AND DIAGNOSIS

IGI Global **Despite success with treatment when diagnosed early, breast cancer is still one of the most fatal forms of cancer for women. Imaging diagnosis is still one of the most efficient ways to detect early breast changes with mammography among the most used techniques. However, there are other techniques that have emerged as alternatives or even complementary tests in the early detection of breast lesions (e.g., breast thermography and electrical impedance tomography). Artificial intelligence can be used to optimize image diagnosis, increasing the reliability of the reports and supporting professionals who do not have enough knowledge or experience to make good diagnoses. Biomedical Computing for Breast Cancer Detection and Diagnosis is a collection of research that presents a review of the physiology and anatomy of the breast; the dynamics of breast cancer; principles of pattern recognition, artificial neural networks, and computer graphics; and the breast imaging techniques and computational methods to support and optimize the diagnosis. While highlighting topics including mammograms, thermographic imaging, and intelligent systems, this book is ideally designed for medical oncologists, surgeons, biomedical engineers, medical imaging professionals, cancer researchers, academicians, and students in medicine, biomedicine, biomedical engineering, and computer science.**

MULTIMODALITY IMAGING OF BREAST CANCER FOR SELECTION AND MONITORING OF TREATMENT

"Despite major improvements in breast cancer care, breast cancer is still a substantial cause of cancer death in Western women. Moreover, research from the past decades demonstrated that breast cancer is a heterogeneous disease. This heterogeneity warrants a personalized treatment approach. With this approach both under- and overtreatment may be minimized. Accurate imaging is essential when applying personalized treatment. The overall aim of this thesis is to investigate if, and how, the application of magnetic resonance imaging (MRI) and positron emission tomography in combination with computed tomography (PET/CT) contributes to improved personalized treatment strategies. Our first research was done in women who are eligible for breast conserving therapy (limited surgery to excise the tumor, combined with radiotherapy). We investigated the ability of MRI to accurately depict the disease extent. Moreover we presented guidelines to select women in whom a preoperative breast MRI can be avoided. Secondly, we investigated the use of PET/CT only, and in combination with MRI to monitor the treatment response in women who were treated with primary chemotherapy. The heterogeneity of breast cancer was taken into account. Our findings cover many issues that may be of importance in comparable studies. Therefore we consider our work part of on-going breast cancer research."--Samenvatting auteur.

THE BIOPOLITICS OF BREAST CANCER

CHANGING CULTURES OF DISEASE AND ACTIVISM

For nearly forty years, feminists and patient activists have argued that medicine is a deeply individualizing and depoliticizing institution. According to this view, medical practices are incidental to people's transformation from patients to patient activists. The Biopolitics of Breast Cancer turns this understanding upside down. Maren Klawiter analyzes the

evolution of the breast cancer movement to show the broad social impact of how diseases come to be medically managed and publicly administered. Examining surgical procedures, adjuvant therapies, early detection campaigns, and the rise in discourses of risk, Klawiter demonstrates that these practices created a change in the social relations-if not the mortality rate-of breast cancer that initially inhibited, but later enabled, collective action. Her research focuses on the emergence and development of new forms of activism that range from grassroots patient empowerment to environmental activism and corporate-funded breast cancer awareness. The Biopolitics of Breast Cancer opens a window onto a larger set of changes currently transforming medically advanced societies and ultimately challenges our understanding of the origins, politics, and future of the breast cancer movement. Maren Klawiter holds a PhD in sociology from the University of California, Berkeley. She is currently pursuing a law degree at Yale University.

THE PERSONAL AND THE POLITICAL

WOMEN'S ACTIVISM IN RESPONSE TO THE BREAST CANCER AND AIDS EPIDEMICS

SUNY Press **An in-depth consideration of women's activism in the AIDS and breast cancer movements.**

HOW DO WOMEN WITH BREAST CANCER AND THEIR MALE PARTNERS EXPERIENCE AND UNDERSTAND SEXUAL INTIMACY AND BODY IMAGE FOLLOWING SURGERY AND RECONSTRUCTION?

The following work has been completed as part of the Birmingham University Clinical Psychology doctorate. Volume I contains a literature review and research paper. The literature review summarises research exploring intimate partner or wider social support on medication adherence for people living with HIV. The research paper describes a qualitative study into the body image and sexual intimacy experiences of women who have undergone a mastectomy with reconstruction and their partners. Volume II of the thesis contains four clinical practice reports (CPRs) and the abstract of a fifth which was presented orally. CPR1 is the case of a 6-year old boy presenting with encopresis formulated from a behavioural and psychodynamic perspective. CPR2 is a case study of 12-year old boy presenting with separation anxiety. CPR3 documents a single-case experimental design that assessed the effectiveness of a Cognitive Behavioural Therapy intervention with a 75-year old woman with panic attacks. CPR4 is a small-scale service evaluation assessing psychological need and barriers to service engagement for people living with HIV. An abstract outlining CPR5, a clinical presentation about an assessment for a 12-year old boy attending a community learning disability team who was displaying anxiety and anger, is also included.

THE MOLECULAR ACTIONS OF MEDROXYPROGESTERONE ACETATE ON ANDROGEN RECEPTOR SIGNALLING AND THE PROMOTION OF BREAST CANCER

The Women's Health Initiative (WHI) clinical trial was the first randomised, double blind, placebo-controlled disease prevention trial to demonstrate epidemiological evidence of a casual link between the use of combined hormone replacement therapy (cHRT) comprising conjugated equine estrogens (CEE) and the synthetic progestin medroxyprogesterone acetate (MPA) and increased breast cancer risk in post-menopausal women. Since the first WHI report in 2002, other observational studies have demonstrated that it is the addition of the synthetic progestin in the cHRT that is associated with an increase in breast cancer risk. The focus of this thesis was to investigate the following hypothesis formulated in the Dame Roma Mitchell Cancer Research Laboratory, which proposed that MPA possesses antagonistic actions on androgen receptor (AR)-signalling and thereby can disrupt the protective effect of androgens in the breast, thus leading to an increased risk of breast cancer. Androgens have been associated with a growth restrictive role in breast tissue in both humans and animals and are now emerging as key hormonal pathways involved in the pathogenesis of breast cancer. The objectives of this thesis were firstly to determine the relationship between the use of cHRT containing MPA and breast cancer incidence in Australian women, and secondly to perform biological studies to investigate the effect of AR-action in breast epithelial cells. Initial findings described in this thesis led to the identification of a positive association between the use of cHRT preparations containing MPA and breast cancer incidence in Australian women. Subsequent biological based studies were undertaken with non-malignant breast tissues samples from pre- and post- menopausal women in an ex vivo breast explant tissue culture experimental model and the oestrogen receptor (ER), progesterone receptor (PR) and AR positive ZR-75-1 breast cancer cell line to investigate the actions of MPA on AR-signalling and cancer-related intracellular signalling pathways. Collectively these studies demonstrated that the actions of MPA can impede the anti-proliferative actions of DHT in both human postmenopausal non-malignant and malignant breast epithelial cells via AR-mediated actions. Furthermore, the combined actions of DHT and MPA were also shown to de-regulate cancer-related intracellular pathways compared to individual hormone treatments. The findings described in this thesis provide novel results indicating that MPA may promote the development of breast cancer in post-menopausal women taking cHRT via AR-mediated actions and that use of this form of hormone therapy remains a major public health concern.

SENTINEL LYMPH NODE BIOPSY

CRC Press **An intuitive, ingenious and powerful technique, sentinel lymph node biopsy has entered clinical practice with astonishing rapidity and now represents a new standard of care for melanoma and breast cancer patients, while showing great promise for the treatment of urologic, colorectal, gynecologic, and head and neck cancers. This text, written by international experts in the technique, provides a clear and comprehensive guide, presenting a detailed overview and discussing the various mapping techniques available and how these are applied in a number of leading institutions. This essential resource for surgical onocologists, pathologists, and specialists in nuclear medicine will also provide key information for those planning to start a sentinel lymph node program.**

EPIGENETICS IN CANCER

BASIC AND TRANSLATIONAL ASPECTS

This thesis investigates epigenetics in cancer with particular emphasis on breast cancer. There are two major themes, see Figure above. The first theme relates to the potential for assessing and developing more efficient epigenetic drugs while the second theme investigates mechanism of downregulation of ANKRD11, a putative tumour suppressor gene, in human breast cancer. This thesis is in the publication format with Chapters 1 and 3 as published articles, Chapter 2 submitted for publication and Chapter 4 as a manuscript in preparation. Theme 1: To improve the epigenetic-based therapeutic approach (Chapter 1 and 2). One of the roles that epigenetics plays in cancer development is the inhibition of transcription of tumour suppressor genes. Chapter 1, published as a review in Biodrugs, examines the knowledge of currently available therapeutic approaches related to epigenetic mechanisms such as DNA methylation for cancer treatment. Drug-related issues that could influence the application of therapeutics for clinical use are reviewed and possible developments to improve the clinical use of the drugs explored. Epigenetic-based drugs are emerging as anti-cancer therapies in the clinic. Existing demethylating agents have poor pharmacological properties that limit their clinical use, and the application of nano-based encapsulation to resolve these issues is discussed. Chapter 2, submitted as an original research article to Biodrugs, presents the development and assessment of an assay to allow comparison of epigenetic-related drugs in a high throughput format. Decitabine is encapsulated in a liposomal formulation and the potency of this newly formulated decitabine and existing drugs are effectively compared using the developed assay system. Further development and validation of the assay system and the liposomal formulated decitabine, not included in the submitted manuscript are included as supplementary data. Theme 2: Investigation of gene silencing mechanism of tumour suppressor ANKRD11 (Chapter 3 and 4). ANKRD11 is novel gene that was previously characterised in our laboratory, and found to be a putative tumour suppressor gene and a p53-coactivator (Neilsen et al. 2008). Chapter 3, published in European Journal of Cancer, investigates the mechanism of downregulation of ANKRD11 in human breast cancer. This chapter identifies the promoter sequence of ANKRD11, demonstrates the critical region of the ANKRD11 promoter subjected to DNA methylation, and associates the DNA methylation levels of ANKRD11 with its gene expression and clinical data. Further analysis of the DNA methylation pattern of this gene revealed a putative GLI1 transcription-factor binding site within the localised region of the promoter that is methylated. Chapter 4, presented as a manuscript in preparation, further explores the relationship between ANKRD11 and GLI1 in breast cancer. GLI1 is a Hedgehog signalling transcription factor, which has been shown to be involved in breast cancer development. This study analyses the transcriptional activity of ANKRD11 in the cells overexpressed with GLI1 and quantifies differential expression of these two genes in different stages of breast cancer. Future experiments to confirm and extend these exciting preliminary findings are discussed. The final chapter of this thesis summarises the findings of these studies and possible future research directions. The impact of these findings for the development of anti-cancer drugs, and the possible role of expression of ANKRD11 and GLI1 in breast cancer are highlighted.

NO FAMILY HISTORY

THE ENVIRONMENTAL LINKS TO BREAST CANCER

Rowman & Littlefield Publishers **No Family History presents compelling evidence of environmental links to breast cancer, ranging from everyday cosmetics to industrial waste. Sabrina McCormick weaves the story of one survivor with no family history into a powerful exploration of the big business of breast cancer. As drugs, pink products, and corporate sponsorships generate enormous revenue to find a cure, a growing number of experts argue that we should instead increase focus on prevention—reducing environmental exposures that have contributed to the sharp increase of breast cancer rates. But the dollars continue to pour into the search for a cure, and the companies that profit, including some pharmaceutical and cosmetics companies, may in fact contribute to the environmental causes of breast cancer. No Family History shows how profits drive our public focus on the cure rather than prevention, and suggests new ways to reduce breast cancer rates in the future.**

WHAT HAPPENS BEFORE CHEMOTHERAPY?! NEURO-ANATOMICAL AND -FUNCTIONAL MRI INVESTIGATIONS OF THE PRE-CHEMOTHERAPY BREAST CANCER BRAIN

WAKING UP, FIGHTING BACK

THE POLITICS OF BREAST CANCER

Little Brown & Company **A study of breast cancer examines medical and social attitudes toward the disease, analyzes the rising incidence of breast cancer, and investigates the growing controversies regarding mammograms, surgery, and the state of research. Tour.**