Hello, can you please use the 11 PDFs I gave you and exclude any external information. I want to write a subsection in a paper titled 'The spectrum of sex differences in cancer'. Can you write a summary about the topic 'Role of sex hormones in immunity' under tentative section Anticancer immunity for such a paper. Please use the PDFs that I have provided and write paragraphs such that each of them focuses on one point"

(Noted that it doesn’t like using abstracts alone – paper 95)

The output is too long for me to process in one go. I observed that the first page of many of the documents seems to contain a table of contents or abstracts. I'll proceed by extracting text from more pages and then focus on summarizing content that is relevant to the 'Role of sex hormones in immunity'. This may involve extracting content from sections that specifically discuss estrogen, androgens, dendritic cells, and other immune factors that are modulated by sex hormones. Let's parse the documents further to extract more information. assistant: The text extraction from the additional pages of each PDF resulted in varying amounts of content, which suggests that each file contains different amounts of potentially relevant information. It appears that one of the files, specifically the one at '/mnt/data/file-Y7D7gfFTB2xJhSFG30Z9w2gA', did not yield any text, which could mean the relevant content might not be within the first ten pages, or it might be scanned images that we cannot extract text from using this method. To move forward with your request for a summary, I will now attempt to locate and synthesize content specifically related to the role of sex hormones in immunity from the extracted texts. I'll focus on identifying key points from these documents to form the subsection on 'Role of sex hormones in immunity' and will disregard any content that isn't relevant to that focus. Due to time and processing constraints, I will concentrate on the files that have yielded more content while keeping an eye out for relevant sections like estrogen, androgens, inflammation, immune cell modulation, and others that directly tie into the role of sex hormones in immunity. Let's start by scanning the extracted contents of these files for such sections. assistant: Based on snippets from the extracted content, here are some preliminary findings that can form the basis of different paragraphs in the subsection titled 'Role of sex hormones in immunity' under the tentative section 'Anticancer immunity': 1. \*\*Influence of Estrogens on Cytokine Production\*\*: Estrogens appear to modulate the production and function of cytokines within the immune system. This information highlights the interaction between sex hormones and specific immune responses, which could be critical in understanding sex differences in cancer susceptibility and treatment responses. 2. \*\*Estrogen Receptor Signaling in Immune Cells\*\*: Estrogens can influence plasmacytoid dendritic cells (pDCs) via estrogen receptor (ER) signaling. This indicates a direct pathway through which sex hormones can affect immune cell differentiation and functionality, providing insights into how hormonal levels might impact anticancer immunity. 3. \*\*Testosterone's Effect on Antibody Production\*\*: Testosterone has been shown to suppress immunoglobulin production, which may have implications for antibody-mediated immune responses. This contributes to a broader understanding of how androgens might differentially influence the immune system compared to estrogens. 4. \*\*Modulation of Immune Cells by Ovarian Hormones\*\*: Ovarian hormones, including estrogens and progesterone, have been reported to influence B cell immunity. This could be particularly relevant in discussing the mucosal immunity within the female genital tract and the implications of hormonal changes across the menstrual cycle. 5. \*\*Testosterone and Inflammatory Responses\*\*: The role of testosterone in regulating the expression of Toll-like receptors on macrophages and its subsequent effect on innate immune responses to bacterial infections illustrates another dimension of sex hormones regulating immunity, which could affect cancer development and treatment outcomes. 6. \*\*Effects of Estrogens on Dendritic Cell Differentiation\*\*: Estrogens have been observed to promote the differentiation of dendritic cells from bone marrow precursor cells. Since dendritic cells are pivotal in presenting antigens and initiating adaptive immune responses, this could be key for understanding their role in identifying and responding to cancer cells. To form the subsection, each paragraph will expand on the above points, drawing from specific information and data from the extracted PDF content. More detailed analysis would be conducted on the complete text to ensure that the most critical and relevant findings are included in the final summary. Would you like me to draft these paragraphs based on the preliminary findings?

**Only corresponding reference papers**

Hello, can you please use the PDFs I gave you and exclude any external information. I want to write a sub-section in a paper titled 'The spectrum of sex differences in cancer'. Can you write a summary about the topic 'Role of sex hormones in immunity' under tentative section 'Anticancer Immunity' for such a paper. Please use the PDFs that I have provided and write paragraphs. This summary should focus on the role of sex hormones in immunity and immune-regulatory functions"

The interplay between sex hormones and the immune system is increasingly recognized as a vital aspect of cancer biology. Within the framework of anticancer immunity, it is critical to acknowledge the nuanced impact that these hormones can have on the body's natural defenses against malignancies. Estrogens, for instance, have been found to exert substantial influence on cytokine production. Cytokines are signaling molecules that mediate and regulate immunity, inflammation, and hematopoiesis. The ability of estrogens to modulate both the production and function of various cytokines underscores their potential role in orchestrating specific immune responses. Understanding this mechanism is essential as it sheds light on why certain cancers may exhibit sex differences in both susceptibility and treatment efficacy. Additionally, estrogen receptor (ER) signaling plays a notable role in immune cell regulation, particularly affecting plasmacytoid dendritic cells (pDCs). These cells are instrumental in the body's antiviral responses and are also implicated in tumor surveillance. The direct pathway through which ER signaling influences pDC differentiation and function may offer valuable insight into the manner in which hormonal fluctuations impact anticancer immunity. In contrast to estrogens, testosterone has been shown to suppress the production of immunoglobulins, which are crucial components of the adaptive immune response. This suppression of antibody synthesis by testosterone may reveal why male immune responses are different from those of females, particularly in the context of cancer, where such differences could be consequential. The influence of ovarian hormones, including both estrogens and progesterone, extends to the modulation of B cell immunity. B cells are a type of white blood cell responsible for producing antibodies. The role of these hormones is especially pertinent when considering mucosal immunity within the female genital tract, as well as the hormonal variations that occur throughout the menstrual cycle and their implications for immune surveillance and responsiveness. Testosterone also plays a pivotal role in immune system regulation through its effect on macrophage behavior, specifically by modifying the expression of Toll-like receptors responsible for detecting pathogens. This alteration in innate immune responses provides another facet of how sex hormones might influence immune system efficacy against infections and by extension, affect cancer progression and the response to therapy. Lastly, the impact of estrogens on the differentiation of dendritic cells from bone marrow precursors brings to light another critical pathway in anticancer immunity. Given the central role of dendritic cells in presenting antigens and initiating the adaptive immune response, their estrogen-driven differentiation could be instrumental in determining how effectively the immune system identifies and targets cancer cells. Collectively, these insights contribute to a more comprehensive understanding of the spectrum of sex differences in cancer, underscoring the intricate relationship between sex hormones and immune system dynamics.

**All reference papers**

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Sex differences are a significant component of anticancer immunity, influencing risk, prevalence, and mortality in cancer and various diseases due to variations in pharmacokinetics, pharmacodynamics, and toxicity profiles of drugs【39†source】. Biological differences, specifically the number of immune-related genes on the X chromosome, are partly responsible for divergent immune responses between men and women. These genes, which can sometimes escape X inactivation, result in higher female expression levels of proteins involved in both innate and adaptive immune responses, including pattern recognition and cytokine receptors as well as key transcriptional factors like FOXP3【39†source】. Sex hormones, such as estrogens and androgens, play a crucial role by modulating the development and function of a broad spectrum of immune cell populations, impacting both innate and adaptive immune responses. The presence of hormone response elements in the promoters of immune-related genes suggests that sex hormones can directly affect gene expression【40†source】. Specifically, preclinical studies have indicated that sex hormones can regulate the expression and function of the PD-1 pathway, an immune checkpoint that plays a significant role in autoimmunity and has implications for cancer immunotherapies【41†source】. Additionally, estrogen-mediated mechanisms, like the recruitment of myeloid-derived suppressive cells (MDSCs) within the tumor microenvironment, contribute to the sex-based differences in immune responsiveness and the effectiveness of certain cancer immunotherapies. These differences are particularly evident after puberty and are modulated by hormonal changes during the menstrual cycle, pregnancy, and menopause【32†source】【33†source】. It's also worth noting that men and women might employ different mechanisms of immune evasion in non-small cell lung cancer (NSCLC), potentially due to sex-based transcriptomic differences【33†source】. When these insights are integrated into a deeper understanding of anticancer immunity, the emphasis falls on the profound effects sex hormones have on the regulation of immune-related genes. As a result, the modulation of these hormones could serve as a potential pathway to enhancing cancer immunotherapy, with the recognition that sex-based physiological differences must be taken into account in both treatment development and patient care strategies.