



TECHNOLOGY LICENSING OFFICE

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BV 2017-24 - *DNA-dependent protein kinase catalytic subunit (DNA-PKcs) inhibition to improve transplantation outcome and reduce immune response*

APPLICATION: Use of DNA-PKcs inhibitors to reduce immune response in a subject or reduce the risk of graft rejection in a transplant patient

KEY BENEFITS:

- Reduce allograft rejection
- Reduce inappropriate T-cell responses associated with various diseases (e.g. allergies and autoimmune diseases)

MARKET SUMMARY: Transplant immunosuppression has a market size of approximately \$5 billion per year in the United States. In spite of the effort put forth to minimize the immune response in these patients, allograft rejection remains a significant and expensive issue. Reducing the immune response in transplant patients would improve transplant success rate and reduce the overall economic burden associated with these procedures.

TECHNICAL SUMMARY: The inventors have identified pharmaceutical compositions that are DNA-PKcs inhibitors. These inhibitors can prevent IL-2 production in T-cells, which makes the compound remarkably useful for immunosuppression in the transplant setting. Reducing the production of IL-2 has the potential to decrease both cell-mediated and humoral immunity that leads to graft rejection. The inventors have demonstrated that DNA-PKcs knockout mice do not reject skin grafts, which supports the hypothesis that DNA-PKcs inhibitors may be valuable for limiting graft rejection. Additionally, the inventors have demonstrated that DNA-PKcs inhibition does not affect PD-1 expression. This is important because PD-1 suppresses the immune system and blocking PD-1 may promote graft rejection. Finally, the inventors have shown that DNA-PKcs inhibition promotes T-helper type 1 cell differentiation.

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DEVELOPMENTAL

Knockout mouse model supports the mechanism of action

STAGE:

PATENT

App Type: PCT

INFORMATION

Country:

AND CONTACT:

Serial No.:

Patent No.:

File Date: 03/30/2018

Issue Date:

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Tech ID: 1724

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