**Study Design**

Title: SYSTEMS BIOLOGY APPROACH TO STUDY INFLUENZA VACCINE IN CHILDREN WITH AUTOIMMUNITY

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Aim – Grant: This Project will study vaccine responses in healthy and sick children. It will address the following questions:

1. Which are the best biomarkers of protective immune response to influenza vaccine in healthy children.
2. How unique autoimmune backgrounds set the stage for responsiveness/unresponsiveness to vaccines.
3. Whether vaccination contributes to increase the breadth of autoimmunity in a disease-specific manner. Ultimately, we expect that these studies will shed light on basic aspects of humoral immune responses to vaccines and will permit us to discover biomarkers of response that can be applied to healthy children and to the general population.

* AIM 1 will establish immune parameters of response to Flu vaccine in healthy children.
* AIM 2 will assess the immune response to Flu vaccine in children with SLE.
* AIM 3 will assess the immune response to Flu vaccine in children with JDM.

Objective: To evaluate the effects of TIV and LAIV immunization on immune cell populations in children. To assess differences in seroprotection and seroconversion between LAIV and TIV.

Subjects: Healthy children; in 2010 also healthy adults.

IRB number: 09-00262 Nationwide Childrens Hospital Columbus Ohio.

Season 2010/11 HIPC Flu vaccine Nationwide Children's Hospital, conducted from November 2011 to February 2012.

TIV: trivalent inactivated influenza vaccine (intramuscular injection); LAIV: live atenuated influenza vaccine (nasal spray).

2010-2011 Vaccines Components: A/California/7/2009 (H1N1), A/Perth/16/2009 (H3N2) and B/Brisbane/60/2008. 40 Subjects: 20 pediatric (all TIV); 20 adults (10 TIV + 10 LAIV). Time points: Days 0-7-30-90.

Total number of samples (tempus tube count): 161 (note this incl. NCH-VK-41 & -42 only day 30 available -> exclude).

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| **Season** | **Age\_group** | **Patient\_ID** | **Day\_0** | **Day\_1** | **Day\_7** | **Day\_30** | **Comment** |
| Season 2011/12 | pediatric | NCH-VK-50 | 10/27/2011 | 10/28/2011 | 11/3/2011 | 11/29/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-51 | 10/27/2011 | 10/28/2011 | 11/3/2011 | 11/29/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-52 | 10/27/2011 | 10/28/2011 | 11/3/2011 | 11/29/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-53 | 10/27/2011 | 10/28/2011 | 11/3/2011 | 11/29/2011 | No fcs files for Day 1 |
| Season 2011/12 | pediatric | NCH-VK-54 | 10/27/2011 | 10/28/2011 | 11/3/2011 | 11/29/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-55 | 10/27/2011 | 10/28/2011 | 11/3/2011 | 11/29/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-56 | 11/1/2011 | 11/2/2011 | 11/7/2011 | 11/28/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-57 | 11/1/2011 | 11/2/2011 | 11/7/2011 | 11/28/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-58 | 11/1/2011 | 11/2/2011 | 11/7/2011 | 11/28/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-59 | 11/1/2011 | 11/2/2011 | 11/7/2011 | 11/28/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-60 | 11/15/2011 | 11/16/2011 | 11/22/2011 | 12/15/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-61 | 11/1/2011 | 11/2/2011 | 11/7/2011 | 11/28/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-62 | 11/10/2011 | 11/11/2011 | 11/17/2011 | 12/8/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-63 | 11/10/2011 | 11/11/2011 | 11/17/2011 | 12/8/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-64 | 11/10/2011 | 11/11/2011 | 11/17/2011 | 12/8/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-65 | 11/10/2011 | 11/11/2011 | 11/17/2011 | 12/8/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-66 | 11/10/2011 | 11/11/2011 | 11/17/2011 | 12/8/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-67 | 12/6/2011 | 12/7/2011 | 12/13/2011 | 1/3/2012 |  |
| Season 2011/12 | pediatric | NCH-VK-68 | 12/6/2011 | 12/7/2011 | 12/13/2011 | 1/3/2012 |  |
| Season 2011/12 | pediatric | NCH-VK-69 | 11/15/2011 | 11/16/2011 | 11/22/2011 | 12/15/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-70 | 11/10/2011 | 11/11/2011 | 11/17/2011 | 12/8/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-71 | 11/15/2011 | no show | 11/22/2011 | no show |  |
| Season 2011/12 | pediatric | NCH-VK-72 | 11/15/2011 | 11/16/2011 | 11/22/2011 | 12/15/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-73 | 12/6/2011 | 12/7/2011 | 12/14/2011 | 1/3/2012 |  |
| Season 2011/12 | pediatric | NCH-VK-74 | 11/15/2011 | 11/16/2011 | 11/22/2011 | 12/15/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-75 | 1/26/2012 | 1/27/2012 | no show | no show |  |
| Season 2011/12 | pediatric | NCH-VK-76 | 1/26/2012 | 1/27/2012 | 2/3/2012 | 2/23/2012 |  |
| Season 2011/12 | pediatric | NCH-VK-77 | 1/12/2012 | no show | 1/19/2012 | 2/9/2012 |  |
| Season 2011/12 | pediatric | NCH-VK-78 | 1/12/2012 | 1/13/2012 | 1/19/2012 | 2/9/2012 | No fcs files for Day 0 & 1 |
| Season 2011/12 | pediatric | NCH-VK-79 | 1/11/2012 | 1/12/2012 | 1/19/2012 | 2/9/2012 |  |
| Season 2011/12 | pediatric | NCH-VK-80 | 11/15/2011 | 11/16/2011 | 11/22/2011 | 12/15/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-81 | 11/15/2011 | 11/16/2011 | 11/22/2011 | 12/15/2011 |  |
| Season 2011/12 | pediatric | NCH-VK-82 | 12/6/2011 | 12/7/2011 | 12/13/2011 | 1/3/2012 |  |
| Season 2011/12 | pediatric | NCH-VK-83 | 12/6/2011 | 12/7/2011 | 12/13/2011 | 1/3/2012 |  |
| Season 2011/12 | pediatric | NCH-VK-84 | 1/12/2012 | 1/13/2012 | 1/19/2012 | 2/9/2012 |  |
| Season 2011/12 | pediatric | NCH-VK-85 | 1/11/2012 | 1/12/2012 | 1/24/2012 | 2/10/2012 | No fcs files for Day 1 |
| Season 2011/12 | pediatric | NCH-VK-86 | 1/26/2012 | 1/27/2012 | 2/2/2012 | 2/23/2012 |  |