**Table 1. High Priority Research Areas** (highest priority indicated with \*\*, high priority with \*)

Overarching and Facilitative Research

\*\* 1. Develop a large international network to collect and pool large numbers of cases diverse in ethnicity and implicated drugs, including:

* 1. Standardized case definitions and data collection tools for both prospective and retrospective studies
  2. Biospecimens from early in the disease course collected by standardized protocol for identification of diagnostic and prognostic biomarkers
  3. Patient registries with associated biobanked samples in partnership with advocacy groups
  4. Long-term outcomes, including morbidity and mortality and downstream sequelae

1. Engage burn units in SJS/TEN case-finding and research in regions like the U.S. where patients are commonly transferred to their care

Basic Research

\* 1. Identify novel biomarkers in acute phases of the disease to improve diagnosis, prognosis

and treatment

\* 2. Identify new predictive markers in addition to HLA and cytochrome P450 variants

including other genetic and metabolic factors and new immunopathogenic mechanisms

1. Develop *in vivo, ex vivo, in vitro,* and animal models to inform studies of causative drugs and preclinical testing of new drugs
2. Improve cheminformatics of drug culprits and develop small molecule assays

Clinical Research

\* 1. Develop low-cost pharmacogenomic assay(s) for implementation in state/national

health programs

\* 2. Pilot pre-emptive testing for feasibility prior to studying its effectiveness in reducing

Incidence

\* 3. Incorporate genotypic information and decision support directly into the medical record

and medication prescribing and dispensing systems

1. Implement testing in high-risk populations and study impact on both safety and efficacy
2. Examine the efficacy, safety, costs, and possible side effects of prescribing alternative medications
3. Develop robust electronic phenotyping algorithms for case identification
4. Expand beyond one gene-one drug models in research to multi-gene panels or genomic sequencing
5. Study ethnic-specific HLA associations or associations/differences between admixed groups and their parent populations, such as Asian Americans compared to Asians in Southeast Asia
6. Engage multiple medical subspecialties that prescribe causative drugs, such as neurologists and rheumatologists, in educational and case-finding efforts
7. Consider universal HLA typing or wider genomic screening and linking to EMR for association with multiple health outcomes
8. Identify factors that discriminate risk allele carriers who have a reaction from those who do not

Pharmacovigilance and Epidemiologic Research

\* 1. Conduct additional epidemiologic studies for basic measures of morbidity, mortality,

outcomes, including:

* 1. Factors associated with disease progression and long-term outcomes, including “non-standard” outcomes such as extracutaneous and neuropsychiatric sequelae and future drug use
  2. Burden and risk studies of racial-ethnic groups within the U.S. and other global regions
  3. Foundational data needed for cost-effectiveness and other health economic research

\* 2. Collect race/ethnicity information and study key population subgroups with high case

burdens in the U.S. and globally

1. Conduct additional cost-effectiveness analyses, informed by ongoing research , to support decision-making on implementation of routine genotyping by hospitals and/or medical care systems
2. Develop pilot projects to ascertain patient preferences on benefits and trade-offs of pharmacogenomic testing
3. Address challenges of current screening recommendations such as low frequency and positive predictive value of risk alleles