INTRODUCTION

This compilation of abstracts will serve as a research guide to support faculty and students in their search for recorded literature in selected journals. Full texts of cited articles are available in the LPU S.H.L. Learning Resource Center. Online version if available, may be browsed in the online databases of Academic OneFile with a password.

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Iodine Deficiency: Current Aspects and Future Prospects
Mina, A., Favaloro, E. J., & Koutts, J.
Abstract: Patient: A 54-year-old Caucasian woman with no history of smoking or drinking, no recent trauma, and no occupational exposure to irritants. No known allergies. No history of recent foreign travel. Current Chief Complaint: Dyspnea and chest pain. Past Medical History: Patient presented in 2002 with epigastric pain and fullness after consumption. Tests showed abnormal liver function tests (LFTs). A liver biopsy was non-conclusive. She was referred to the gastroenterologist, who felt that though her LFTs were abnormal, they have been static. Another liver biopsy was not warranted. The patient continued to have abnormal LFTs even though her symptoms improved until February 2006, when she developed pruritus and right upper quadrant (RUQ) pain. In 2003 the patient started presenting with symptoms of hypothyroidism, as she presented with depression weight gain. Testing revealed increased thyroid-stimulating hormone (TSH) and low T3 and T4. The patient began thyroxine. The patient has had severe left knee pain and common extensor pain (tennis elbow) since 2006. Pruritus and night sweats started in 2006 and persisted on and off. Atypical angina, transient ischemic attacks (TIA), left arm weakness, dysarthria, amaurosis fugax-like symptoms (appeared on only 1 occasion), left-sided facial droop, and numbness, began in June 2007 and persisted. Dyspnea has worsened since 2005. No conclusive diagnosis has been reached. Drug Allergies: Aspirin and Salbutamol Current Medications: Prednisolone (7.5 mg daily), Azathioprine (50 mg once daily), Ursodeoxycholic Acid, Atorvastatin, Thyroxine (75 mcg daily), Bisoprolol, Irbesartan, Alendronate, Warfarin, Ventolin. Family

Subjects: 1. Sarcoidosis -- Diagnosis, 2. Sarcoidosis -- Symptoms

Abstract: Objective: Compare the agreement between four third-generation rapid or automated human immunodeficiency virus (HIV) tests vs the fourth-generation Abbott ARCHITECT HIV Ag/Ab Combo assay (Combo Test) (Abbott Laboratories, Abbott Park, IL) in 7 clinical laboratories located throughout the Dallas-Fort Worth, TX, metroplex area. Methods: We tested a total of 220 specimens from the general population of patients being screened for HIV antibody status, including Western blot (WB) and HIV-1 RNA viral load by NAAT in patients with initially positive HIV screening tests. We performed a method precision study of the Combo Test and evaluated the agreement between the 4 comparative methods (CMs) against the Combo Test method (TM) using a 2 × 2 contingency table to determine values for positive percent agreement (PPA), negative percent agreement (NPA), and overall percent agreement (OPA) according to the guideline (EP12-A2) for the evaluation of qualitative assays published by the Clinical Laboratory Standards Institute (CLSI). Results: The Combo Test yielded consistent (reproducible) results when the HIV antibody (or p24 antigen) concentration was 20% away or more from C<sub>50</sub>. In addition, values for PPA, NPA, and OPA for CM vs TM results were all 100%, or not significantly different from 100%. Conclusion: The high detection rate of the Combo Test, when coupled with its high diagnostic sensitivity and specificity, rapid TAT
(<30 minutes) of test results using a fully automated instrument (ARCHITECT), and excellent agreement with HIV-1/2 antibody results by several commercially available HIV-1/2 screening tests and with WB and NAAT results, indicate that the Abbott HIV-1/2 Ab/Ag Test is a useful screening test in the identification of HIV-infected individuals.

**Subjects:** 1. AIDS Serodiagnosis -- Methods

Abstract: Background: Streptococcus species account for 17%-50% of the microorganisms causing infectious endocarditis (IE), but S. pneumoniae rarely causes IE. Most clinical microbiology laboratories today depend on the optochin test to identify pneumococci. However, there have been several reports of optochin-resistant pneumococci. Case Report: A 64-year-old man suffered from sepsis and had a large vegetation on the aortic valve. The bacteria detected in the blood cultures showed α-hemolysis and were optochin-resistant, which suggested that these microorganisms were viridans streptococci. However, the bile solubility test, additional biochemical testing, and genetic analysis by polymerase chain reaction (PCR) revealed that the isolate was S. pneumoniae. Conclusions: Alpha-hemolytic streptococci showing optochin resistance should undergo additional tests before being identified as viridans streptococci, especially if the strain has been isolated from a sterile site in the body, such as the blood or cerebrospinal fluid.

Subjects: 1. Endocarditis -- Microbiology
2. Streptococcal Infections -- Microbiology
3. Endocarditis -- Diagnosis, 4. Pneumonia, Bacterial -- Diagnosis, 5. Pneumonia, Bacterial -- Microbiology

**Abstract:** Tetraploidy and near-tetraploidy are rare in acute myeloid leukemia (AML), contrary to other hematological disease. In this paper we describe a case of a 52-year-old male with AML associated with tetraploidy, mutation in tyrosine kinase receptor FLT3, and very short survival. At presentation maculopapular rash with crustae, lymphadenopathy, and hepatosplenomegaly was diagnosed. The blasts comprised 80% of marrow nucleated cells (POX negative and PAS finely granular positive). Immunophenotyping done on marrow cells was (CD34, HLA DR, CD14, CD64, CD33, CD11b, and CD15) and correlated with the acute monoblastic leukemia. Detection of FLT3 mutation was done by polymerase chain reaction (PCR). Cytogenetic analysis show: 85-93, XYYY,inc(cp5)/46,XY. Based on these considerations, we suggest the detection of FLT3 mutations as a diagnostic procedure for all AML patients.

**Subjects:** 1. Leukemia, Myeloid, Acute -- Familial and Genetic, 2. Mutation, 3. Protein Kinases, 4. Genes
Abstract: Objective: This study was undertaken to determine if automated differential leukocyte counts (A-DIFF) can be used in place of manual differential leukocyte counts (M-DIFF) in chronic lymphocytic leukemia (CLL) patients. Methods: Relative and absolute automated lymphocyte counts obtained from 83 specimens from 76 CLL patients were compared with corresponding manual counts obtained by performing differential on albuminized blood smears. Means and correlation coefficients were calculated using Excel software. Results: The mean relative lymphocyte count by automated method was 73.6% as compared to 75.6% by the manual method. The mean absolute lymphocyte count by automated method was $32.1 \times 10^3/\mu\text{L}$ as opposed to $32.9 \times 10^3/\mu\text{L}$ by the manual method. The correlation coefficients were 0.928 and 0.998 for the relative lymphocyte counts and absolute lymphocyte counts, respectively. Conclusion: Automated differential leukocyte counts can be used in place of M-DIFF in CLL.

Subjects: 1. Leukemia, Lymphocytic, Chronic
2. Lymphocyte Count -- Methods, 3. Automation, Laboratory
Abstract: Background: To evaluate the significance of serum cystatin C (Cys C) levels in pediatric patients with chronic kidney disease (CKD) diagnosed by renal biopsy and who show normal serum creatinine (Cr) levels. Methods: The patient group was composed of 167 males (M) and 119 females (F) with CKD enrolled from the Department of Pediatrics at Kyung Hee Medical Center from July 2009 to May 2010. The serum Cys C, Cr, and C-reactive protein (CRP) were tested using a chemical analyzer (Toshiba, Nasushiobara, Japan). Results: The mean age of the total patients was 11.72 years, and the mean body weight was 32.24 kg. The mean Cys C value was 0.84 mg/L, and 24 patients (3 Henoch-Schönlein purpura nephritis [HSPN], 3 IgA nephropathy [IgAN], 10 mesangial proliferative nephritis [MesPN], and 8 nephritic syndrome [NS]) showed increased Cys C levels (range: 1.0-1.6 mg/L). Conclusions: In this study, 95% of the patients showed only slightly increased Cys C levels (0.5~1.1 mg/L) from the upper normal limit of the reference range (0.9 mg/L). Therefore, we carefully suggest that mildly increased Cys C without increased Cr might not have clinical significance.


**Abstract:** Objective: Chemerin was shown to play a role in the colocalization of natural killer (NK) cells, which have an antitumor role. We aimed to determine the expression of chemerin and the relationship of chemerin expression with prognosis in patients with non-small cell lung cancer (NSCLC). Methods: We examined chemerin expression and the infiltration number of NK cells in NSCLC patients using immunohistochemistry. The association of chemerin expression with clinicopathologic characteristics and prognosis was analyzed. Results: Of the NSCLC patients, 51.85% exhibited lower expression levels of chemerin protein. The chemerin expression was significantly correlated with histological grade and the infiltration of NK cells. Non-small cell lung cancer patients with a lower chemerin expression had poorer survival rates than those with a higher expression. Multi-variable Cox regression analysis revealed that the chemerin expression level was an independent factor for prognosis. Conclusions: A greater expression of chemerin is an independent predictor of a better prognosis for patients with NSCLC.

**Subjects:** 1. Carcinoma, Non-Small-Cell Lung -- Physiopathology. 2. Prognosis. 3. Intercellular Signaling Peptides and Proteins -- Blood. 4. Tumor Markers, Biological -- Blood

**Abstract:** Objective: In this study, we detected the influenza A/H1N1 virus using multiplex reverse transcription polymerase chain reaction (RT-PCR) and 2 real-time RT-PCR assays and compared these methods. Methods: Nose and throat swab samples from 48 patients with influenza-like symptoms were tested using 3 assays. Discrepant results were confirmed by sequencing. Results: The sensitivity of multiplex RT-PCR was 62.5%. Among 13 discrepant samples, 12 were concordant with real-time RT-PCR results; only 1 sample had an ambiguous result. The 2 real-time RT-PCR assays showed the same results except for 1 sample. Conclusions: The results demonstrated that concurrent real-time RT-PCR assays could be used as primary diagnostic and confirmatory assays and may provide rapid and accurate assessments of the novel H1N1 virus strain. Multiplex RT-PCR assays could detect large numbers of samples and different viral species at a time; although laboratory services using multiplex RT-PCR should not exclude the possibility of false-positive results.

**Subjects:** 1. Influenza, Pandemic (H1N1) 2009 2. Influenza A Virus, H1N1 Subtype -- Analysis 3. Polymerase Chain Reaction -- Methods

Abstract: Systemic sclerosis (SSc) is a clinically heterogeneous, systemic disorder affecting connective tissue of skin, internal organs, and walls of blood vessels. It is characterized by alterations of the microvasculature in the form of hypoxia, digital ulcers, and pulmonary arterial hypertension; disturbances of the immune system, including dysbalance of cytokine expression, autoantibodies (Auto-ab), and abnormalities of blood progenitor and/or effector cells; and by massive deposition of collagen in the connective tissue of the skin and various internal organs. This review discusses epidemiology and survival; clinical features including subsets and internal organ involvement; pathophysiology including genetics, microvasculature, immunobiology, fibroblasts (FBs), and connective tissue metabolism; and environmental factors. Early diagnosis and individually tailored therapy help to manage this disorder. Therapy involves immunomodulation and targeting of blood vessels and fibrosis. The multicenter online database "European Scleroderma Trials and Research" project allows further insight of prognostic factors and conception of new therapies. Physical and psychotherapy are important.

Subject: 1. Sclerosis

Abstract: Digital pathology is a new technology and industry. Official agencies, including the Clinical Laboratory Improvement Amendments (CLIA), the College of American Pathologists (CAP), and the U.S. Food and Drug Administration (FDA), provide little guidance, and manufacturers still have to learn what it means to provide instruments to a clinical laboratory. With digital pathology now entering clinical laboratories, it is crucial for physicians and laboratory professionals to understand the regulatory requirements and how to best implement them in their clinical laboratories. The goal of this article is to provide those professionals with a comprehensive regulatory overview and a reference framework for their future work in digital pathology. This article presents the different regulatory requirements separately—first for clinical laboratories and then for medical device manufacturers.

Subjects: 1. Pathology -- Methods, 2. Digital Imaging
Bender, L. M., Cotten, S. W., & Willis, M. S. (2011). Kids in America: Newborn Screening for Cystic Fibrosis. Laboratory Medicine, 42(10), 595-601.

Abstract: Within the last year, all 50 states in the United States have adopted newborn screening (NBS) protocols for cystic fibrosis (CF), the most common fatal autosomal recessive disease among Caucasian populations. In this overview, we discuss the rationale for implementing NBS for CF and discuss the different testing algorithms states have adopted. Based on studies in the United States, Australia, and the United Kingdom, these measures will likely lead to less severe disease, prolonged life, and more cost-effective management of CF in the long run.

Subjects: 1. Cystic Fibrosis -- Diagnosis, 2. Health Screening -- Methods

**Abstract:** In the detection of monoclonal proteins using capillary electrophoresis (CE), several problems have been described, especially for small amounts of paraprotein, light chain (LC) disease, and cases associated with contrast interference. In this report, we describe 3 unusual cases that showed false-positive peaks due to radiologic contrast interference and the escape of monoclonal LC in CE. In these cases questionable for monoclonal components, conventional gel tests and free LC assays could be helpful to confirm monoclonal gammopathy. Therefore, multiple methodological modalities should be combined for diagnosing and monitoring plasma cell neoplasms and related disorders.

**Subjects:** 1. Electrophoresis -- Methods, 2. Capillaries -- Anatomy and Histology, 3. Proteins -- Physiology
Abstract: Background: Influenza A H1N1 has contributed to significant morbidity and mortality, yet very few studies on changes in hematologic and biochemical markers have been reported. Methods: The variable characteristics of several laboratory indices were statistically analyzed during the disease course. Results: In the incipient stage, the RBC and platelet counts in most patients were normal, while total WBC, neutrophils, and lymphocytes decreased in some cases. The hepatic and renal function indicators were mostly within the normal limits, while electrolyte imbalance occurred in some cases. T lymphocytes subgroups counts were significantly decreased in the acute stage and became extremely low a few days later, then recovered to normal limits in the convalescent stage. Conclusions: T lymphocytes subgroups could be considered as progressive markers of H1N1, which were of great clinical significance in early diagnosis, progression, and prognosis evaluation of H1N1. This work provided convenient hematologic diagnostic criteria for reference.

Subjects: 1. Influenza A Virus, H1N1 Subtype
2. Influenza -- Diagnosis, 3. Hematologic Agents

**Abstract:** Objective: We evaluated high-performance liquid chromatography (HPLC) for species identification of mycobacteria from various clinical specimens in an urban hospital in South Korea between January 2005 and December 2009. Methods: In the study period 24,774 cultures were completed, yielding the 3215 clinical isolates cultivated for mycobacteria and positive cultures that had mycolic acid investigated by HPLC. For species identification, we compared HPLC patterns of clinical isolates with 33 standard Mycobacterium species. Results: There were 3 different HPLC groups with single, double, and triple-cluster patterns representing 9, 20, and 4 mycobacterial species, respectively. Species identification rates of HPLC for Mycobacterium tuberculosis and nontuberculous mycobacteria (NTM) were found to be 100% and 95.6%, respectively. Among mycobacterial isolates, 12.1% were NTM-positive. There were 20 different NTM species with frequencies of 0.3%~15.5%. Conclusion: The HPLC method was highly sensitive identifying NTM isolated from clinical specimens.

Abstract: Background: The development of hemolytic alloantibodies and erythrocyte autoantibodies complicates transfusion therapy in thalassemia patients. Methods: The frequency, causes, and prevention of this phenomenon in 90 transfused thalassemia patients were evaluated at Fatemeh Zahra Hospital in Bushehr in a cross-sectional study. Results: In our study, the age of onset of symptoms ranged from 40 days to 12 years (1.72 ± 1.88 years). Hemoglobin (Hb) levels per transfusion in these patients were 8.40 ± 0.82%. Red cell alloantibodies were detected in 9 patients (10%). The red cell antibodies developed in this report were mainly Kell and C system. Our data showed that alloimmunization to minor erythrocyte antigens and erythrocyte autoimmunization of significant clinical variables are frequent findings in transfused thalassemia patients. Conclusion: There is no relation between the number of blood units transfused and antibody formation in thalassemia, but it is an important factor for increased alloimmunization in these patients.

Subjects: 1. beta-Thalassemia -- Diagnosis
2. Patient Care, 3. Antibodies -- Physiology
4. Health Screening -- Methods

Abstract: Circulating autoantibodies produced by the patient's own immune system after exposure to cancer proteins are emerging as promising biomarkers for the early detection of cancer. An advantage of autoantibodies in cancer detection is their production in large quantities, despite the presence of a relatively small amount of the corresponding antigen. Autoantibodies are also expected to have persistent concentrations and long half-lives due to limited proteolysis and clearance from the circulation. Here, we review current methods for the broad screening of cancer-specific autoantibody targets and the use of such targets to develop clinically relevant assays for the detection of cancer.


**Abstract:** Objective: To compare the efficacy of Chicago sky blue (CSB) stain with the routine potassium hydroxide (KOH) wet mount in the diagnosis of dermatophytosis and pityriasis versicolor. Methods: Duplicate skin scrapings from patients with a clinical diagnosis of dermatophyte infection and pityriasis versicolor were examined with the KOH wet mount and the CSB stain. Results: Thirty-six patients had dermatophyte infections, and 13 patients had pityriasis versicolor. After 30 minutes, 13 (36%) of 36 dermatophyte slides and 2 (15%) of 13 pityriasis versicolor slides became positive with 20% KOH. The corresponding data for CSB stain were 23 (64%) of 36 dermatophyte slides and 10 (77%) of 13 pityriasis versicolor slides. Conclusion: Chicago sky blue stain is superior to the KOH wet mount for the diagnosis of dermatophyte infection and pityriasis versicolor and is equally inexpensive. We recommend reading negative dermatophyte slides again on Day 2, but a 30-minute reading is adequate for pityriasis versicolor.

**Subjects:** 1. Staining and Labeling -- Methods 2. Tinea -- Diagnosis, 3. Pityriasis -- Diagnosis 4. Enhancement of Contrast Effect -- Methods
Mendoza, R., Moore, M., Passwater, M., & Fadeyi, E. A. (2011). Delayed Hemolytic Transfusion Reaction Without Detectable Autoantibodies or Alloantibodies: A Possible Role of Phosphatidylserine Exposure on Donor RBCs. Laboratory Medicine, 42(11), 653-656.

**Abstract:** Delayed hemolytic transfusion reactions (DHTRs) may occur when there is an antigen mismatch between transfused RBCs and recipient RBC antibodies where sensitized RBCs are cleared by macrophages or complement activation leading to immunoglobulin G (IgG) mediated hemolysis. Some DHTR etiologies remain unknown since there are cases of DHTR when an RBC autoantibody or alloantibody is absent. Mechanisms have been proposed to explain these types of cases of DHTR, including bystander or reactive hemolysis by hyperactive macrophages. Studies in patients with sickle cell disease (SCD) have shown abnormalities in the structure and function of the RBC membranes including exposure of phosphatidylserine (PS) leading to macrophage clearance of sickled erythrocytes. We report on a case demonstrating that DHTR may occur as a result of PS exposure on antigen-matched RBC, resulting in macrophage clearance and hemolysis without detection of autoantibodies or alloantibodies. An in vitro measurement showed an increased exposure of PS on compatible donor RBCs using the patient's plasma, which may be responsible for increased hemolysis during DHTR.


**Abstract:** Background: Low molecular weight thiols (cysteine, cysteinylglycine, glutathione [GSH] and homocysteine) are important intermediates in different metabolic pathways. Glutathione has a relevant role as an antioxidant in detoxification of toxic compounds and xenobiotics, and homocysteine represents a risk factor for cardiovascular, neurological, and congenital diseases. Homocysteine and GSH are metabolically related in a pathway including cysteine and cysteinylglycine as intermediates. For these reasons, determination of homocysteine and related thiols is of great importance in the diagnosis of several diseases. Methods: The measurement of these sulphur compounds can be performed by using different methods, such as liquid or gas chromatography/mass spectrometry, high-performance liquid chromatography (HPLC), or capillary electrophoresis. Results: This study describes an HPLC method coupled with fluorimetric detection for the simultaneous determination of cysteine, cysteinylglycine, GSH, and homocysteine in different biological fluids (blood, saliva, urine, and cerebrospinal fluid [CSF]). Conclusion: The comparison of the results obtained by other authors, as well as the method validation and the analytical costs, indicate that this HPLC method is particularly suitable for routine measurement of thiols in different body fluids.
Subjects: 1. Homocysteine, 2. Glutathione

Abstract: Background: To determine whether estrogen receptor-a(ESR1) PvuII and XbaI gene polymorphisms affect carotid artery atherosclerosis in an Iranian population. Methods: There were 445 consecutive patients referred for isolated coronary artery bypass graft (CABG) surgery at our center registered in the study. The subjects were classified into 2 major categories with (≥50%) and without (<50%) carotid stenosis. Using polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP), the presence of PvuII and XbaI polymorphism within the ESR gene were analyzed. Results: Even after controlling for age, male sex, cigarette smoking, dyslipidemia, diabetes, and hypertension in a multivariable analysis, PvuII and XbaI polymorphisms were not found to be associated with the occurrence of carotid stenosis ≥50% (P=0.626 and P=0.992, respectively). Conclusion: Our data suggests that ESR1 PvuII and XbaI gene polymorphisms did not have an effect on carotid artery stenosis in an Iranian population undergoing CABG.


Abstract: Objective: In this study we give a detailed description of how to construct verification rules and then evaluate the benefits brought to the laboratory. Methods: All logic processes and verification rules are constructed in middleware with reference to the CLSI Auto10-A Guideline. There were 569,001 patient test results collected to establish the range of the limit check, delta check, and the consistence rule check. Results: Daily results show the autoverification (AV) passing rate of all test results to be 92%~95%. About 80% of test reports can be auto-released. Conclusions: Individual differences in the verification of test results are eliminated, turnaround time (TAT) is shortened, and full-time equivalent (FTE) are reduced, thus enabling medical technologists to devote more time and effort to handling intercepted test reports, which, in turn, improves the quality of patient care.

Subjects: 1. Chemistry, Clinical -- Evaluation
2. Systems Validation -- Evaluation

Abstract: Objective: Genetic variations and mutations are the etiological factors of leukemia. NAD(P)H:quinone oxidoreductase (NQO1) plays an important role in the detoxification of quinones. C609T and C465T are 2 common polymorphisms in NQO1 resulting in lower NQO1 activity compared with wild type (CC). We assessed the frequency of C609T (NQO1"2; Proline to Serine) and C465T (NQO1"3; Arginine to Tryptophane) polymorphisms of the NQO1 gene among the Iranian population to determine the association between these polymorphisms and a susceptibility to adult acute myeloid leukemia (AML). Materials and Methods: Frequencies of NQO1 gene polymorphisms were determined in 140 AML patients for NQO1"2 and NQO1"3. In addition, 160 age-sex matched healthy individuals participated in this study as a control group. Genotyping was done using polymerase chain reaction and restriction fragment length polymorphism (PCR-RFLP) assays. Results: No significant association was observed between these 2 polymorphisms of NQO1 and the risk of AML. Odds ratio (OR) for C609T and C465T were 0.917 (95% CI=0.513-1.639) and 1.976 (95% CI=0.549-7.121), respectively. Men showed a higher incidence of C609T and C465T NQO1 than women. The majority of patients with a mutant allele were diagnosed as M3 sub type of French-American-British (FAB) classification. Conclusions: Our findings suggest that the NQO1 C609T and C465T gene variants do not have a major influence on the susceptibility to adult AML. Interestingly, we found a
higher incidence of the T allele in NQO1"2 than NQO1"3 in the control and patient groups. Further studies are required to validate these findings across different populations.

Abstract: A new fungal surrogate marker, (1-3)-β-D-glucan, offers a noninvasive method for the potential surveillance and diagnosis of invasive fungal infections. Invasive fungal infections have long been associated with significantly high morbidity and mortality on hematology-oncology wards and recipients of either solid-organ or hematopoietic stem cell transplantation. The diagnoses of invasive fungal infections have historically been made difficult by the need for invasive methods. (1-3)-β-D-glucan testing requires a minimally invasive sample that can be used to aid in the diagnosis of an invasive fungal infection as well as monitor the response to treatment. One disadvantage of (1-3)-β-D-glucan testing is that a positive test alone lacks sufficient sensitivity and specificity for a definitive diagnosis. While formal guidelines for the use of (1-3)-β-D-glucan testing are lacking, this chromogenic assay provides a new opportunity for testing at-risk populations. A review and recommendation for its laboratory and clinical application are provided. Glossary (1-3)-β-D-glucan: A polysaccharide component of the cell wall of most fungi.

Subjects: 1. Glucans -- Classification, 2. Glucans -- Analysis

**Abstract:** Immune thrombocytopenia occurs when antibodies targeting specific glycoproteins (GPs) on the platelet surface lead to their destruction. Tests of the patient's platelets and serum for antibodies and typing of DNA for human platelet alloantigens (HPA) can be helpful in confirming a clinical diagnosis of immune thrombocytopenia. A thorough workup includes 1) serum tests using intact platelets; 2) antigen-capture assays to identify the specific HPA targeted by platelet antibodies; and 3) HPA genotyping of the patient's DNA. For patients suspected of having autoimmune thrombocytopenia, a direct test of an eluate of the patient's platelets for autoantibodies targeting the most common GPs can be performed. Properly interpreted platelet serologic test results, taken together with a good clinical history and other laboratory data, will ensure a more accurate diagnosis and appropriate treatment.

**Subjects:** 1. Blood Platelets, 2. Antibodies, 3. Antigens

**Abstract:** Despite infrastructure and capacity challenges in Africa, significant development has been made in the number of laboratories supporting immunological and safety studies required for large-scale HIV/AIDS vaccine or intervention trials. In Uganda, cohorts participating in HIV intervention trials are often recruited from rural areas. To avoid transporting samples from intervention trial areas over long distances (120 km) to central laboratories in Entebbe, we set up a standardized peripheral blood mononuclear cells (PBMCs) processing laboratory at a field station in Masaka, southwest Uganda. The laboratory was well equipped and enrolled into the International AIDS Vaccine Initiative (IAVI) Quality Assurance (QA) program. Staff was trained in laboratory techniques and Good Clinical Laboratory Practice (GCLP). The laboratory received IAVI and GCLP accreditation in 2008. In this paper we describe the process and achievements of measures taken to overcome challenges, to build staff capacity, and to optimize the quality of the cells yielded.

**Subjects:**
1. Acquired Immunodeficiency Syndrome -- Prevention and Control, 2. AIDS Vaccines, 3. Laboratories

Abstract: In developed countries, the majority of medical decisions are made on the basis of quality laboratory testing according to established standards and enforced regulations. With the large investments of global health initiatives into resource-limited settings in sub-Saharan Africa, there is an opportunity to establish quality laboratory testing by overcoming barriers such as physical infrastructure, quality management plans according to external standards, and human resource capacity building. Strengthening laboratories could change the paradigm from empiric, algorithm-based clinical care to care based on accessible test-based accurate diagnoses.

Lum, G. (2011). Falsely Elevated Parathyroid Hormone-Related Protein (PTH-RP) in a Patient With Hypercalcemia and Renal Failure. Laboratory Medicine, 42(12), 726-728.

Abstract: Humoral hypercalcemia of malignancy (HHM) is the cause of hypercalcemia in the majority of patients with hypercalcemia and cancer. Parathyroid hormone-related protein (PTH-RP) has been identified as the circulating factor that mediates HHM. An N-terminal and a C-terminal PTH-RP are clinically useful assays for screening patients for HHM, and both assays are elevated in such patients. C-terminal PTH-RP depends on glomerular filtration and accumulates in patients with renal failure without malignancy, resulting in falsely-elevated levels, whereas N-terminal PTH-RP is low or undetectable in such patients. We present a case of a patient with renal failure and hypercalcemia who did not have an obvious malignancy and who presented with an elevated C-terminal PTH-RP level and a normal N-terminal PTH-RP. In patients with renal failure and hypercalcemia without cancer, C-terminal PTH-RP may be falsely elevated, especially if the eGFR is <20 mL/minute, and in such patients, N-terminal PTH-RP, because it is less affected by renal function, is the preferred test.


**Abstract:** Background: Staphylococcus aureus is a clinically important pathogen. A small number of whole-cell fluorescence in situ hybridization (FISH) probes have been reported to detect S. aureus. New online computational tools for in silico design and testing make it possible to assess candidate FISH probes for S. aureus.

**Materials and Methods:** Six online tools, NCBI-Nucleotide, Ribosomal Database Project, NCBI-Blast, Reverse-Complement, Probecheck, and mathFISH, were employed in a workflow to evaluate FISH probes for S. aureus. A previously reported probe, Staaur-16S69, was compared to a new probe, KT18-16S68, predicted by mathFISH to have the same performance.

**Results:** A number of new probes for S. aureus were predicted to perform as well or better in silico as those previously reported. When tested in a FISH assay, Staaur and a new probe, KT18, were found to have the same performance.

**Conclusion:** Existing and new FISH probes for S. aureus were found to be accurately identified and characterized with online computational tools. In silico evaluation of probes has the potential to reduce the time spent evaluating probes in the laboratory.

**Subjects:** 1. In Situ Hybridization, Fluorescence -- Methods, 2. Staphylococcus Aureus, 3. DNA Probes -- Analysis

Abstract: Toxic elements ("heavy metals") are common to the environment and are responsible for both intentional poisonings and unintentional exposures that can lead to adverse health effects and potentially death. Dangerous exposures can be prevented by recognizing and minimizing common sources of toxic elements in our diet, water, workplace, and homes. Laboratory testing is an important tool for detecting and managing toxic element exposure; several analytical methods are available. However, the clinical value of elemental testing is dependent upon collecting an appropriate specimen at an appropriate time, with consideration of many pre-analytical variables that can compromise testing. In this review, toxicokinetics and pre-analytical variables associated with toxic element testing are discussed, with emphasis on arsenic, cadmium, lead, and mercury.

Abstract: Iodine deficiency disorders (IDD) result from inadequate thyroid hormone production due to inadequate iodine intake. It is estimated that 2 billion individuals worldwide have insufficient iodine intake. Iodine deficiency is the most common cause of preventable mental impairment worldwide. The usually recommended strategy to control iodine deficiency is through universal salt iodization and more recently through iodine fortification of flour. Introduction of iodized salt to regions of chronic iodine-deficiency disorders might transiently increase the proportion of thyroid disorders due to iodine excess, but overall the small risks of iodine excess are far outweighed by the substantial risks of iodine deficiency. Food authorities in different countries should be empowered to implement suitable protocols and ensure that effective follow-up procedures are in place, such as those used by the Food Standards in Australia and New Zealand. Future aspects and recommendations are also highlighted in this review.

Subjects: 1. Iodine Deficiency, 2. Nutrition Disorders -- Physiopathology