Introduction
The mural paintings in world wild were deteriorated by physical, chemical and microorganism. Many place have studied and researched that focus on microorganism especially fungi. Including central of Thailand but Northen part of Thailand never made before and also not data.

Objective
To study the diversity of fungi which grow on Chiang Mai’s temple murals. To study the color deteriorated effect of fungi on Chiang Mai’s temple murals paintings.

Shan Style Mural Painting
Wat Buak Krook Luang
Wat Pa Daed
Wat Ta Kam

Methodology

1) Sample Collection : Cotton Swap Technique

2) Isolation: Serial Dilution & Spread Plate Technique

3) Observation and Identification

Slide Culture & Molecular Biology Technique

4) Color Deterioration Test

Malachite Mineral
PDA
Malachite incorporate PDA

Conclusion
1) Identified by molecular biology technique using ITS genes for sequencing found fungi on the mural paintings include Aspergillus sp., Coprinella sp., Curvularia sp., Fusarium sp., Penicillium sp. And Trichoderma caraelemontis.
2) The most abundant species are Penicillium oxalum, P. citrinum and Trichoderma caraelemontis.
3) Some isolate’s the result identified by molecular biology technique was failed example O and X isolate there should be reidentified in the future.
4) MBPL2, MXT11L4, MXT11 can create circular zone on PDA – malachite color because these isolate can using Cu²⁺ that are main structure of Malachite Minerals.

Abstract
Microorganisms are the main cause of biodeterioration in mural paintings, among them are fungi which play a huge role in the deterioration of these materials. There are numbers of temples in Chiang Mai which has profoundly intriguing Shan style mural paintings. For instance, Wat Buak Krook Luang, Wat Tha Karm and Wat Pa Daed. Currently, the deterioration of mural paintings of the mentioned temples are not yet studied. There were total of 73 isolates of fungi on PDA medium, some of them were identified by morphology and molecular biology technique using ITS genes for sequencing. The results shown Penicillium oxalum, P. citrinum and Trichoderma caraelemontis were the most abundant of all the isolates, while only 3; sample code MBPL2 MXT11L4 and MXT11L4 were found to possess an ability to deteriorate color of malachite which were observed by clear zone on malachite incorporate PDA medium. The clear zone on the medium may cause by acids which fungi secreted as their Secondary metabolites on to malachite or fungi can use copper from malachite.

Results

1) Observation and Identification

<table>
<thead>
<tr>
<th>Temples</th>
<th>No. of Isolates</th>
<th>Genera</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wat Buak Krook- Luang</td>
<td>27</td>
<td>Aspergillus sp.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coprinella sp.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Penicillium sp.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trichoderma sp.</td>
</tr>
<tr>
<td>Wat Ta Kam</td>
<td>25</td>
<td>Coprinella sp.</td>
</tr>
<tr>
<td>Mae Tang District</td>
<td></td>
<td>Penicillium sp.</td>
</tr>
<tr>
<td>Wat Pa Dad</td>
<td>21</td>
<td>Curvularia sp.</td>
</tr>
<tr>
<td>Mae Chaem District</td>
<td></td>
<td>Coprinella sp.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fusarium sp.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Penicillium sp.</td>
</tr>
<tr>
<td>Total</td>
<td>73</td>
<td></td>
</tr>
</tbody>
</table>

2) Color Deterioration Test

3) Phylogenetic Tree of Fungi

Ascomycota
Basidimycota

References
• Sebou W. 2014. Biodiversity of Fungi Contaminating Mural Painting At Archaeological Sites. Master of Science Degree Thesis, Program of Biotechnology Graduate School, Siquanz University

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